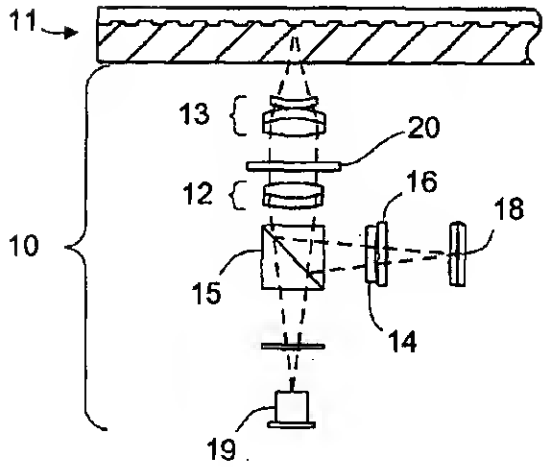


FIG. 1A

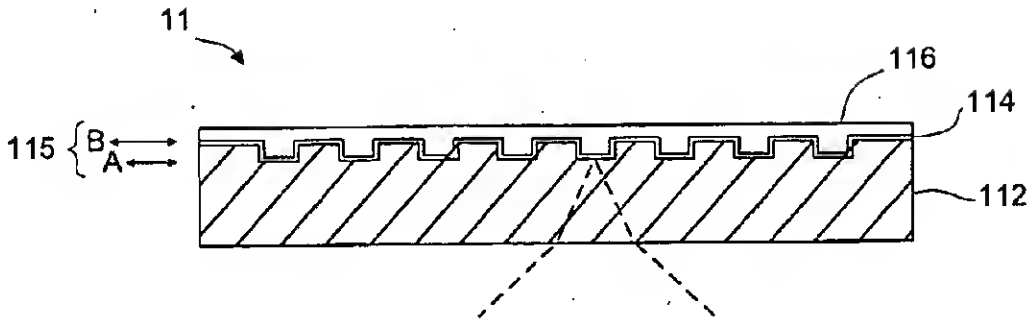


FIG. 1B

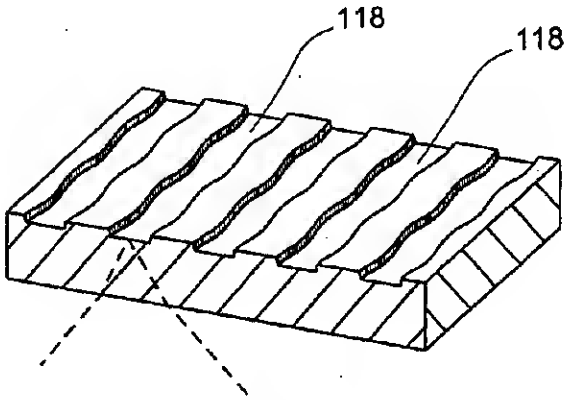


FIG. 1C

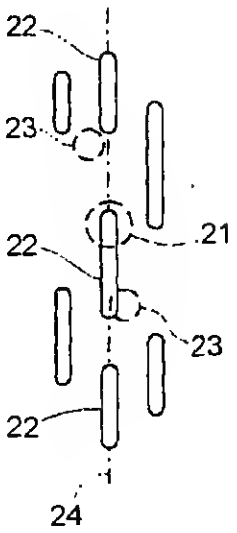


FIG. 2A

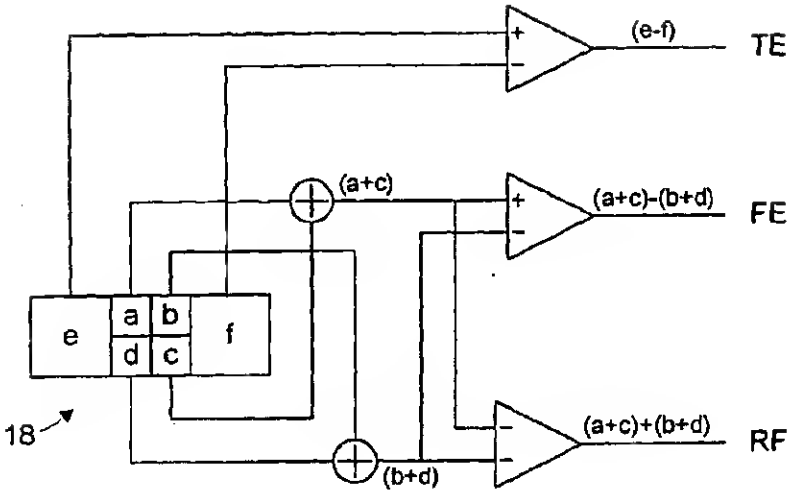


FIG. 2B

FIG. 3A

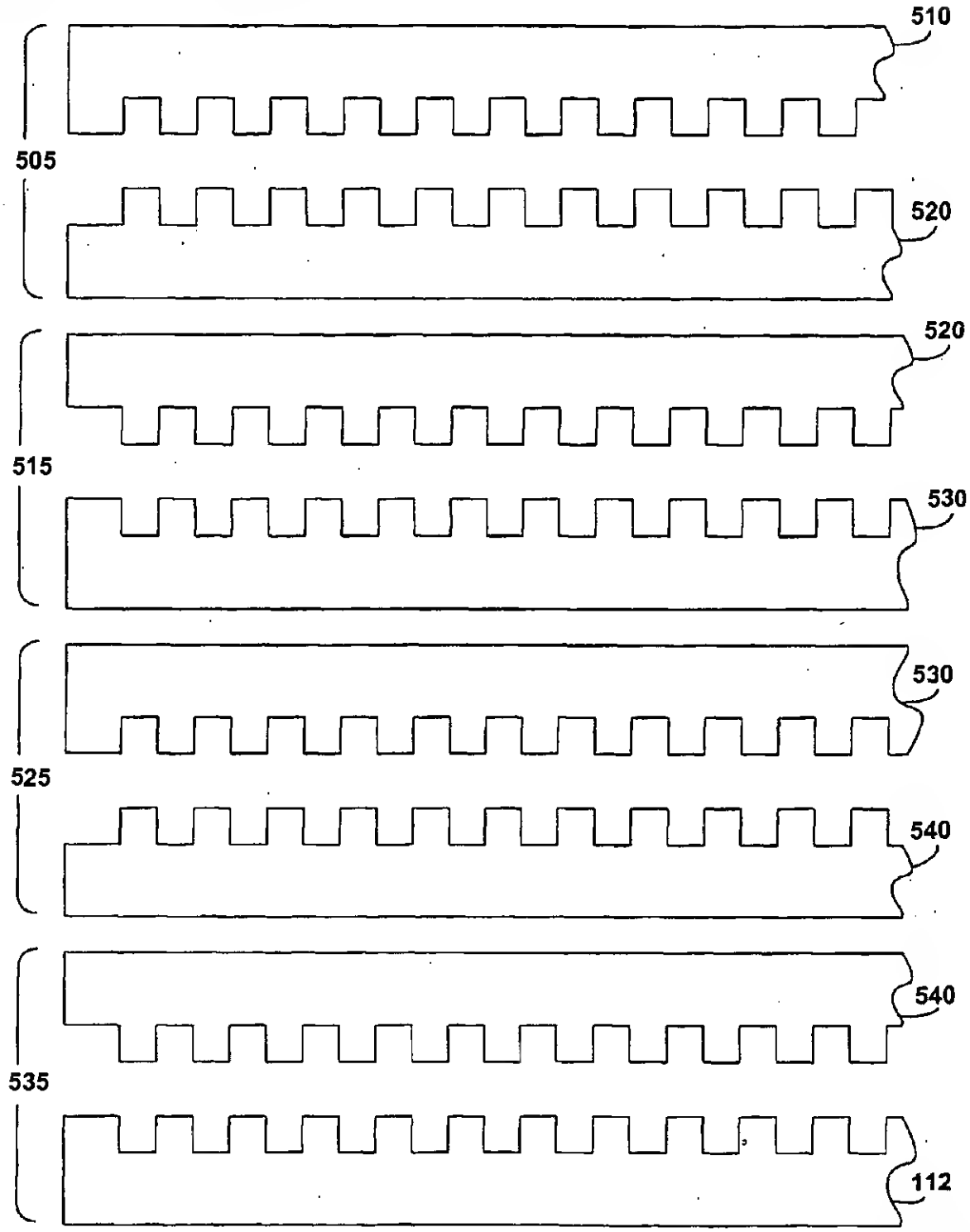


FIG. 3B

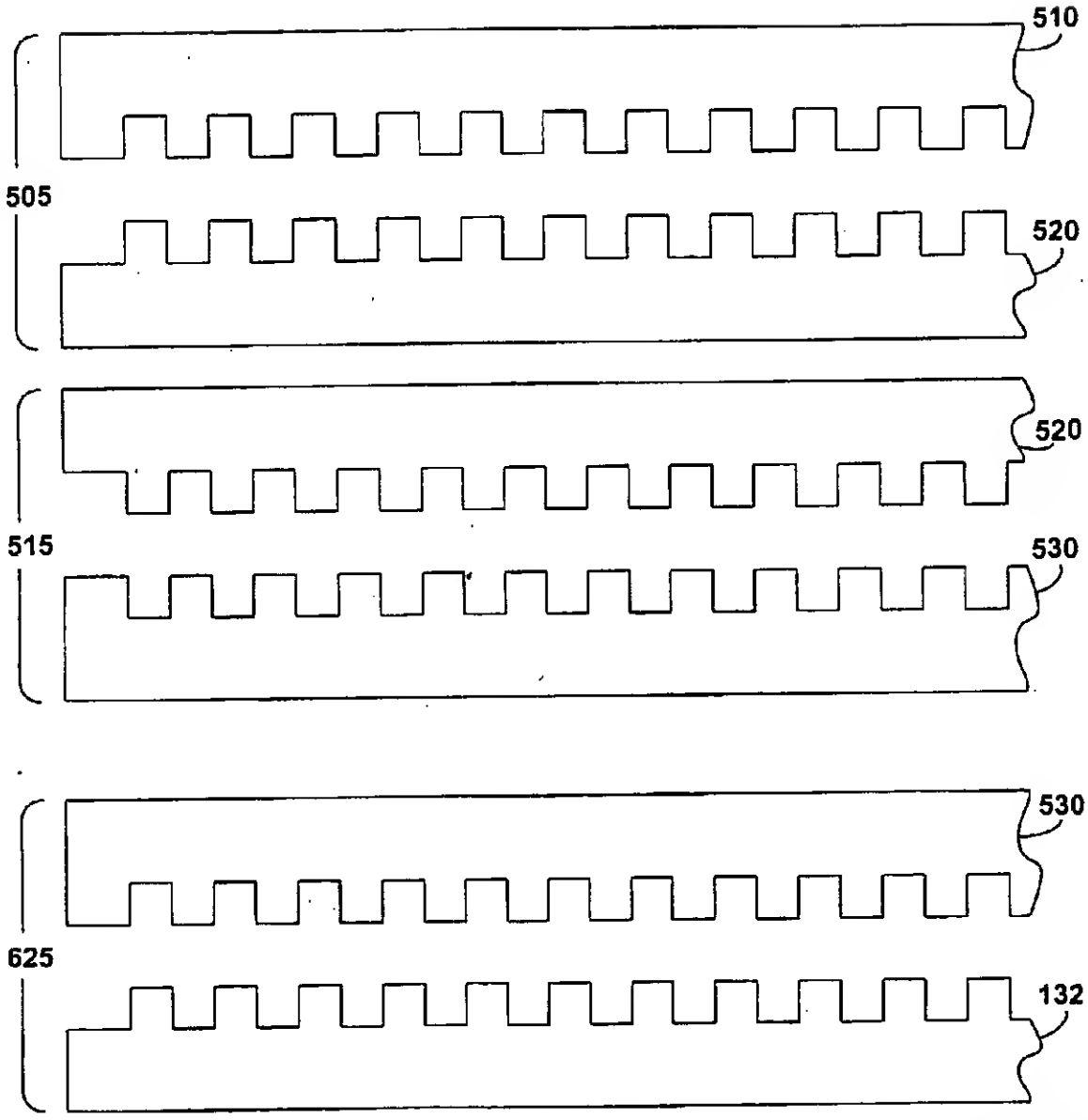


FIG. 3C

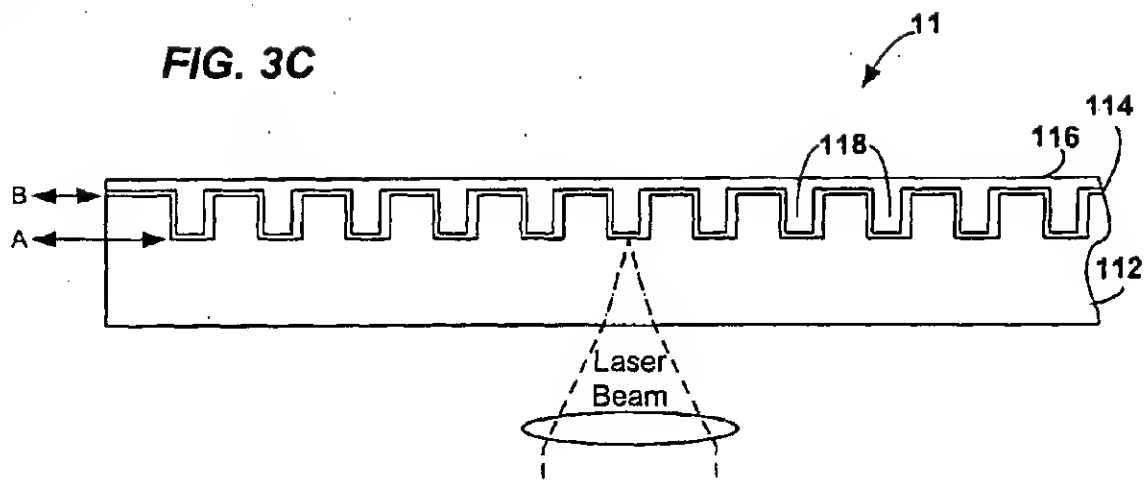


FIG. 3D

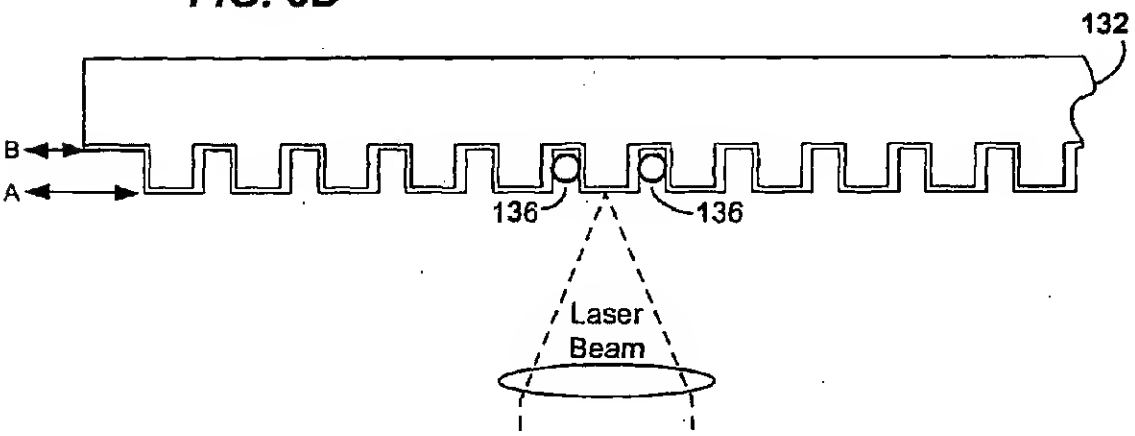
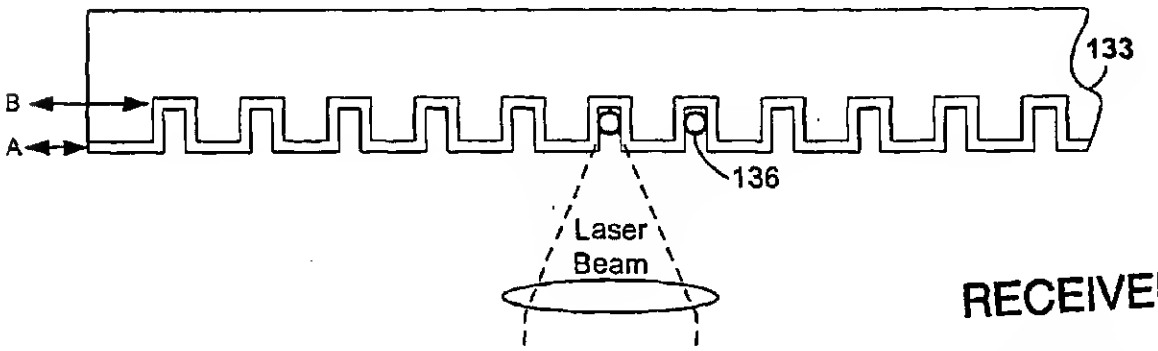


FIG. 3E



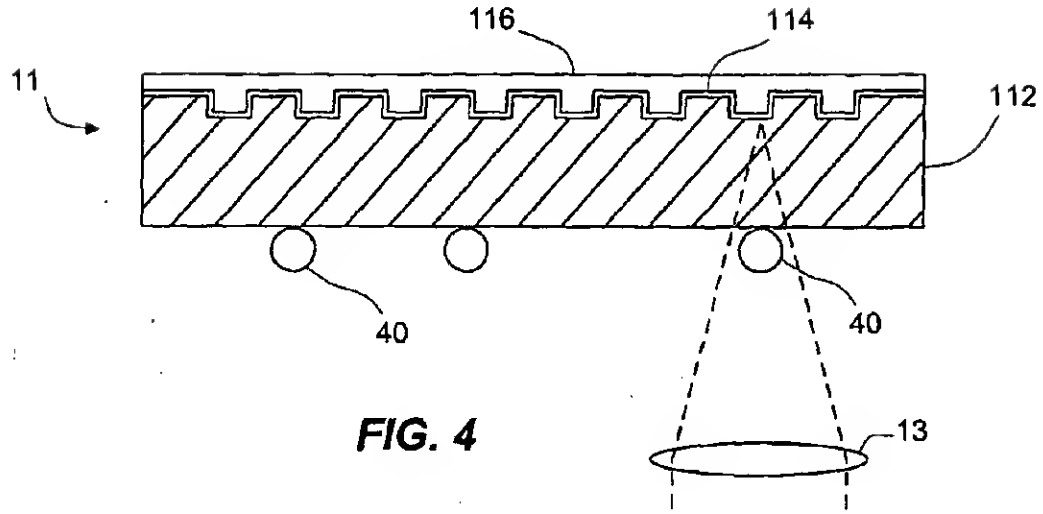


FIG. 4

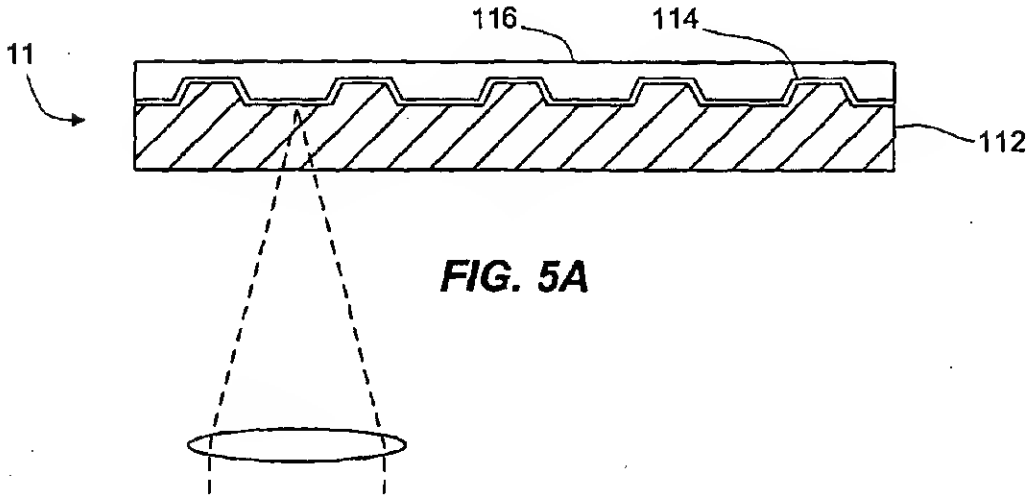


FIG. 5A

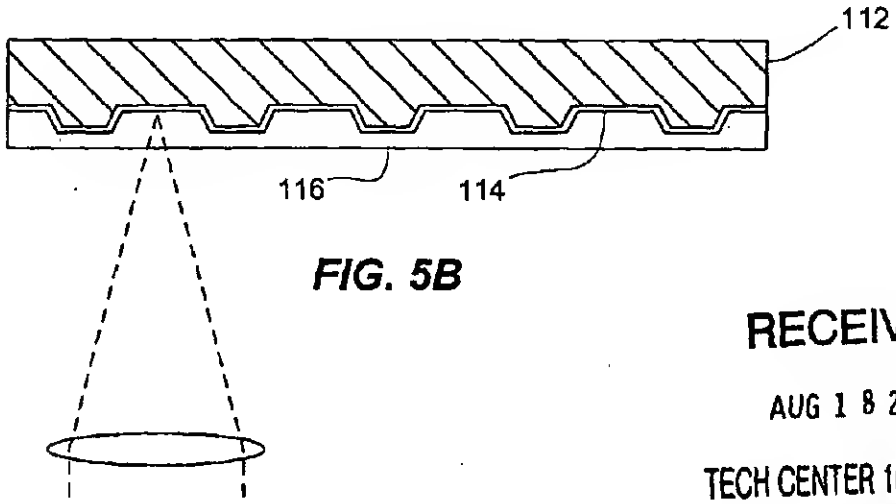


FIG. 5B

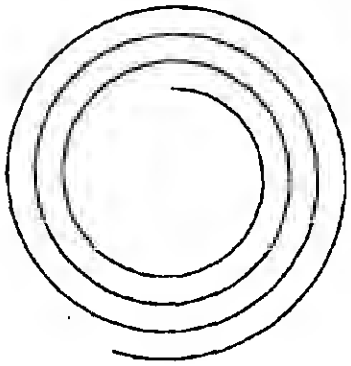


FIG. 5C

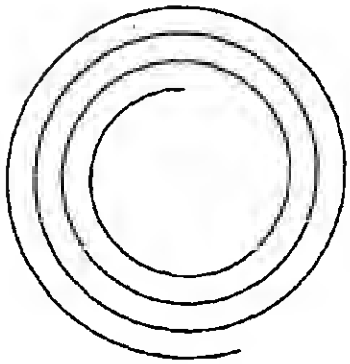


FIG. 5D

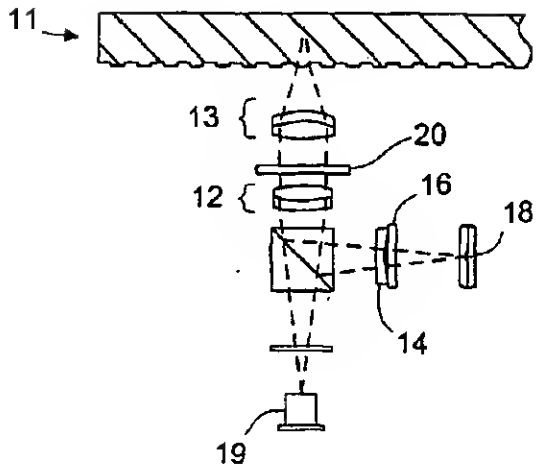


FIG. 6A

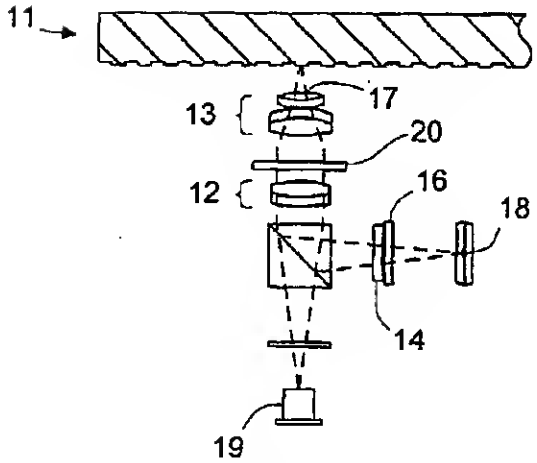


FIG. 6B

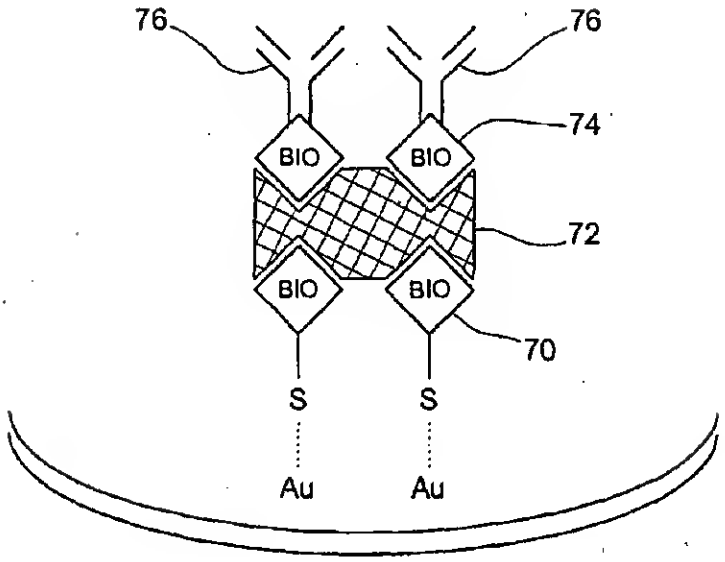


FIG. 7A

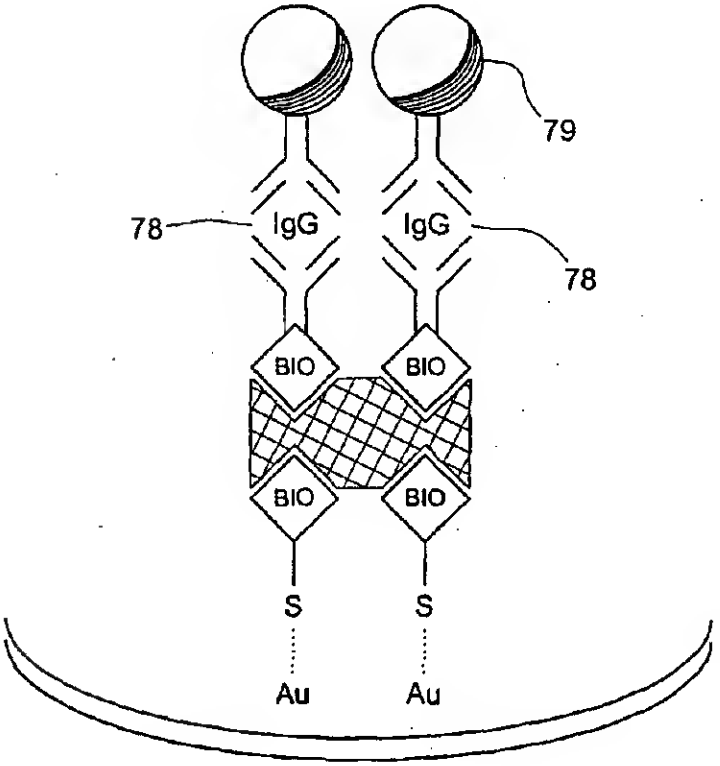
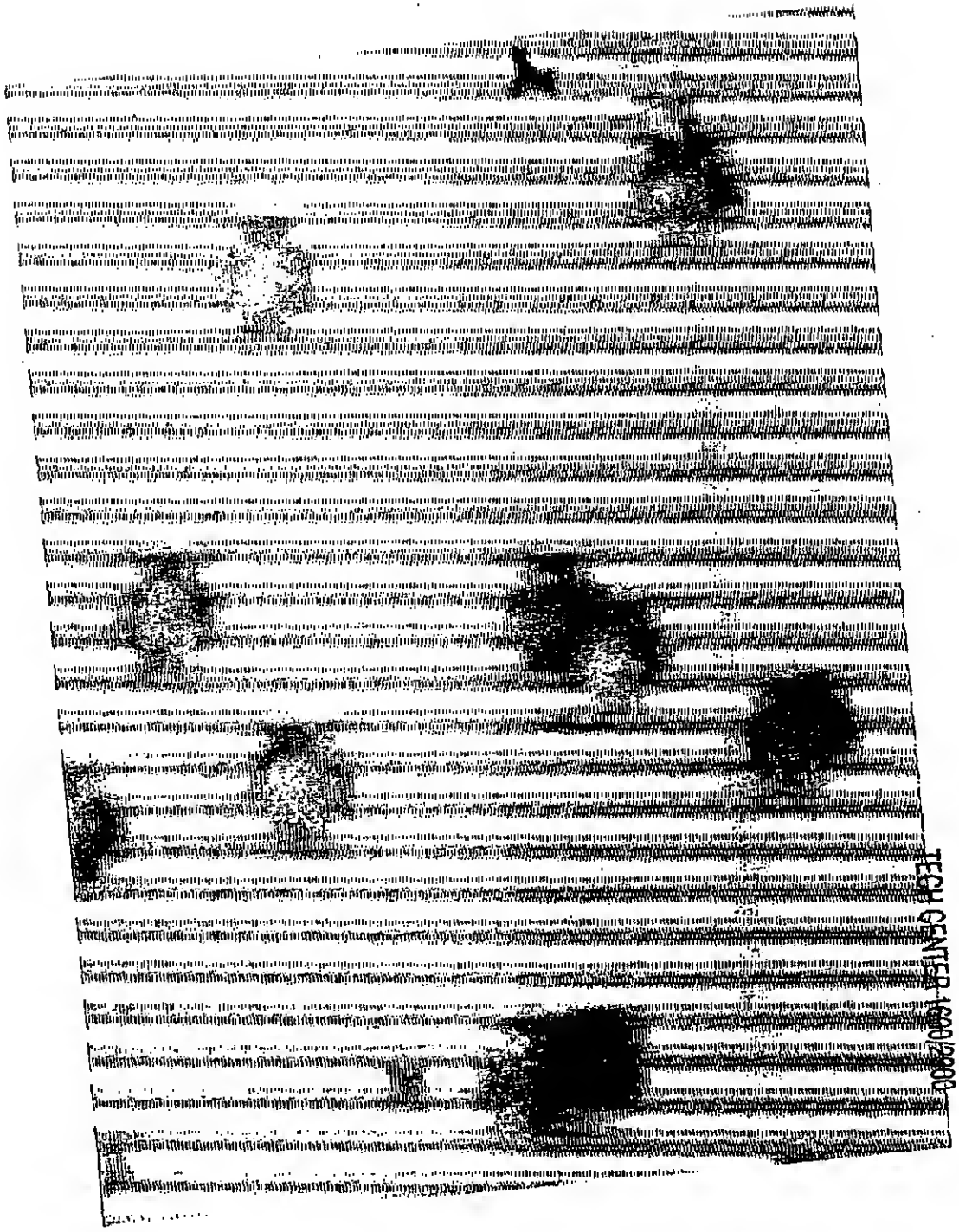
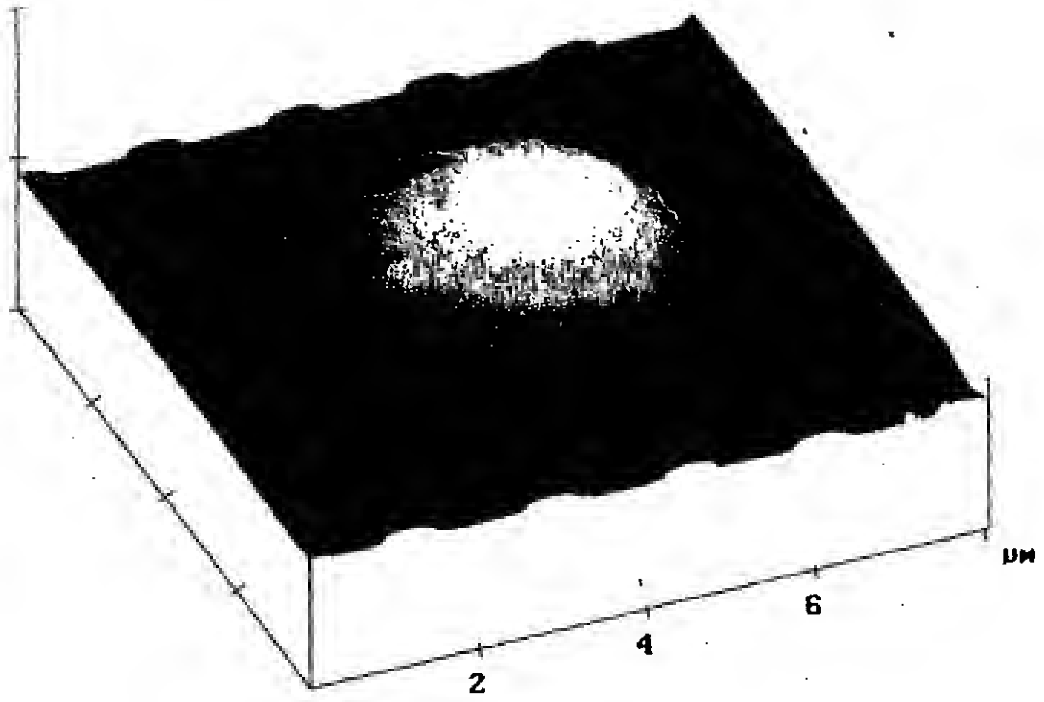
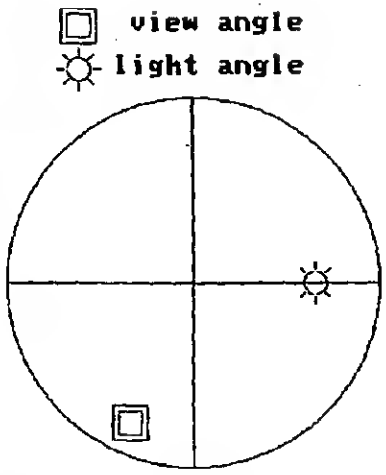


FIG. 7B

FIG. 8







X 2.000 μm/div
Z 2500.000 nm/div

Sphere on Wobble Groove

FIG. 9

Title: TRACKABLE OPTICAL DISCS WITH CONCURRENTLY READABLE ANALYTE MATERIAL
Inventor: Mark O. Worthington
Docket No: BTI1 9810080(US)USX1P1X1

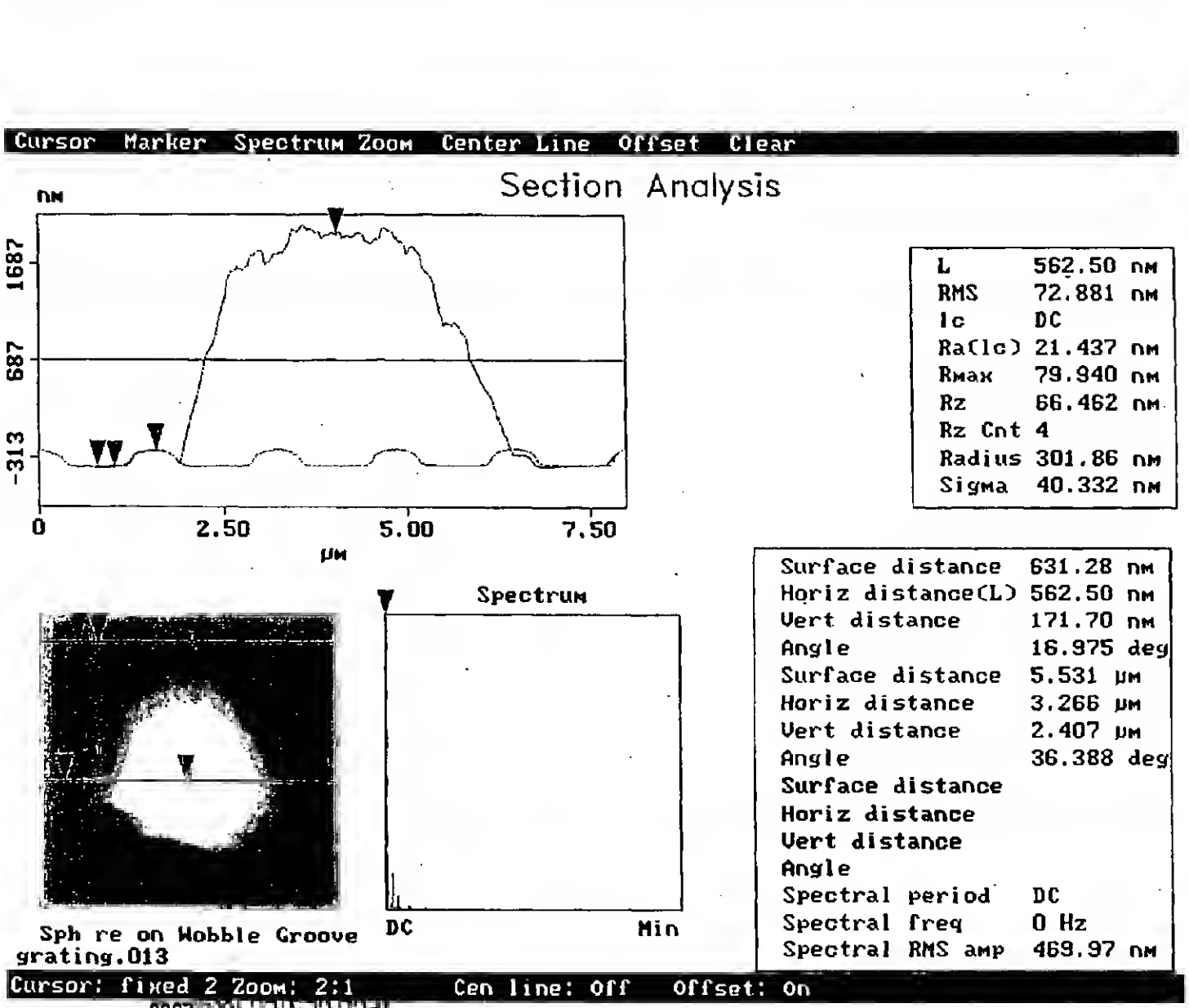


FIG. 10

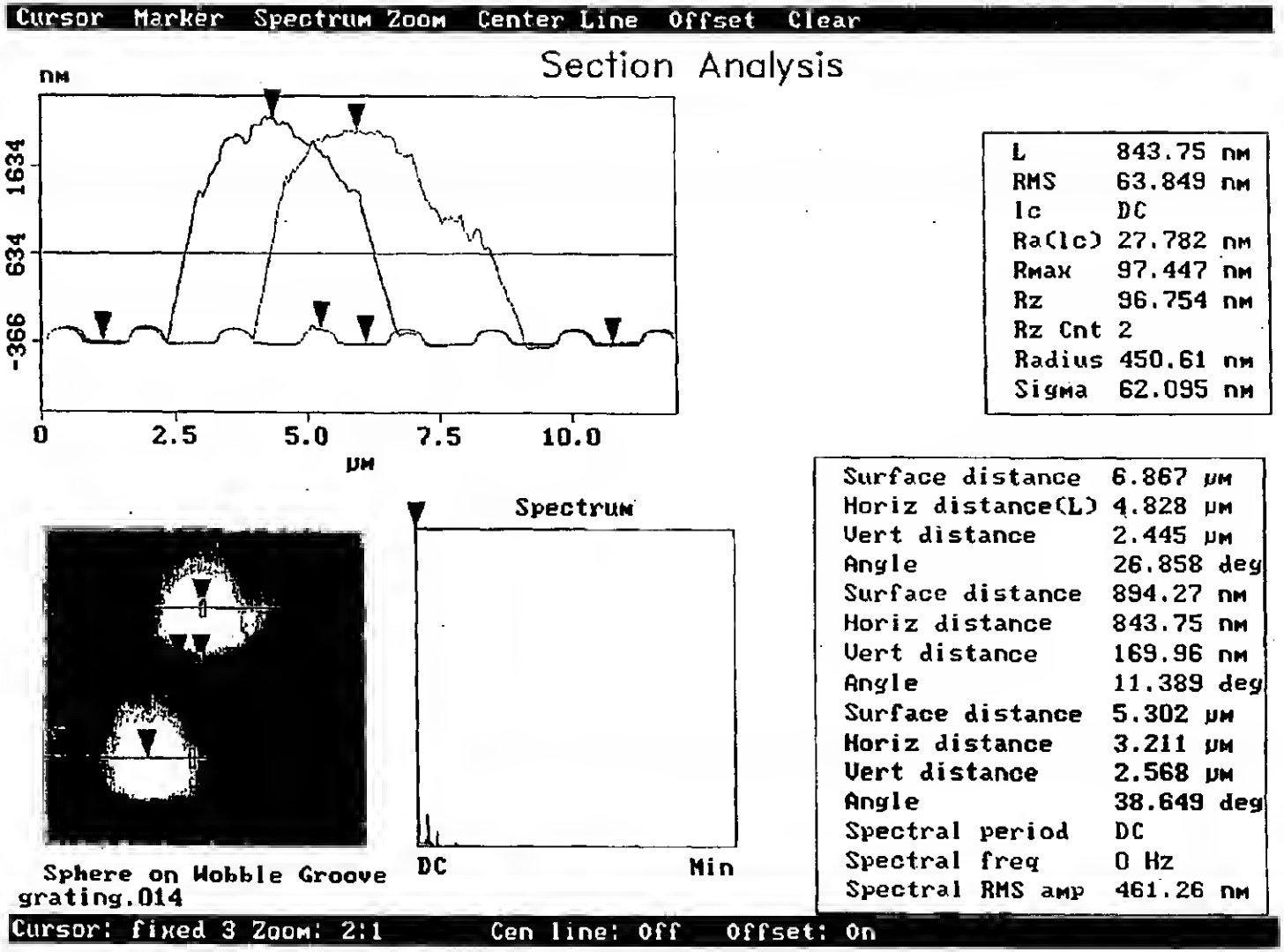


FIG. 11

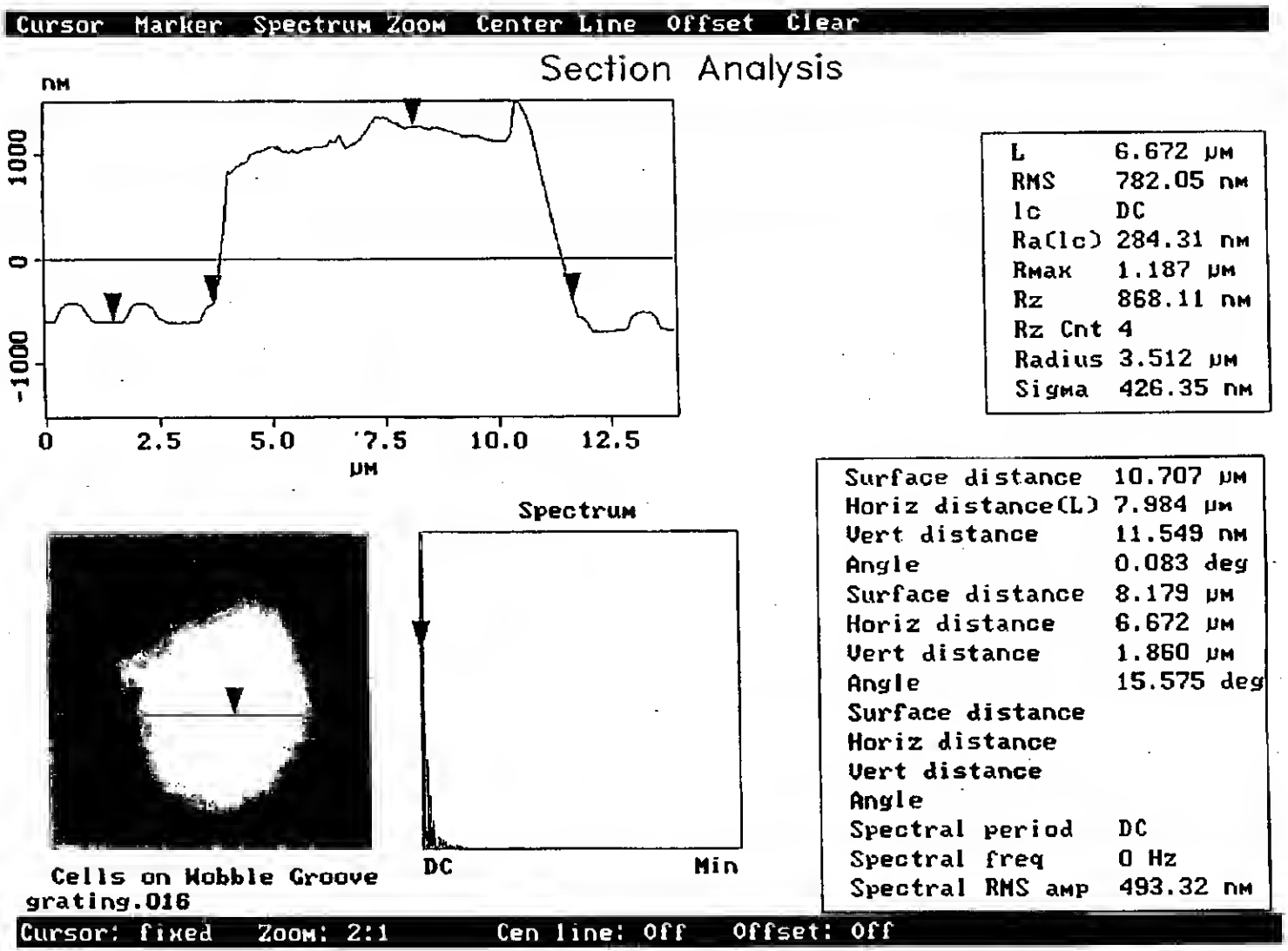


FIG. 12

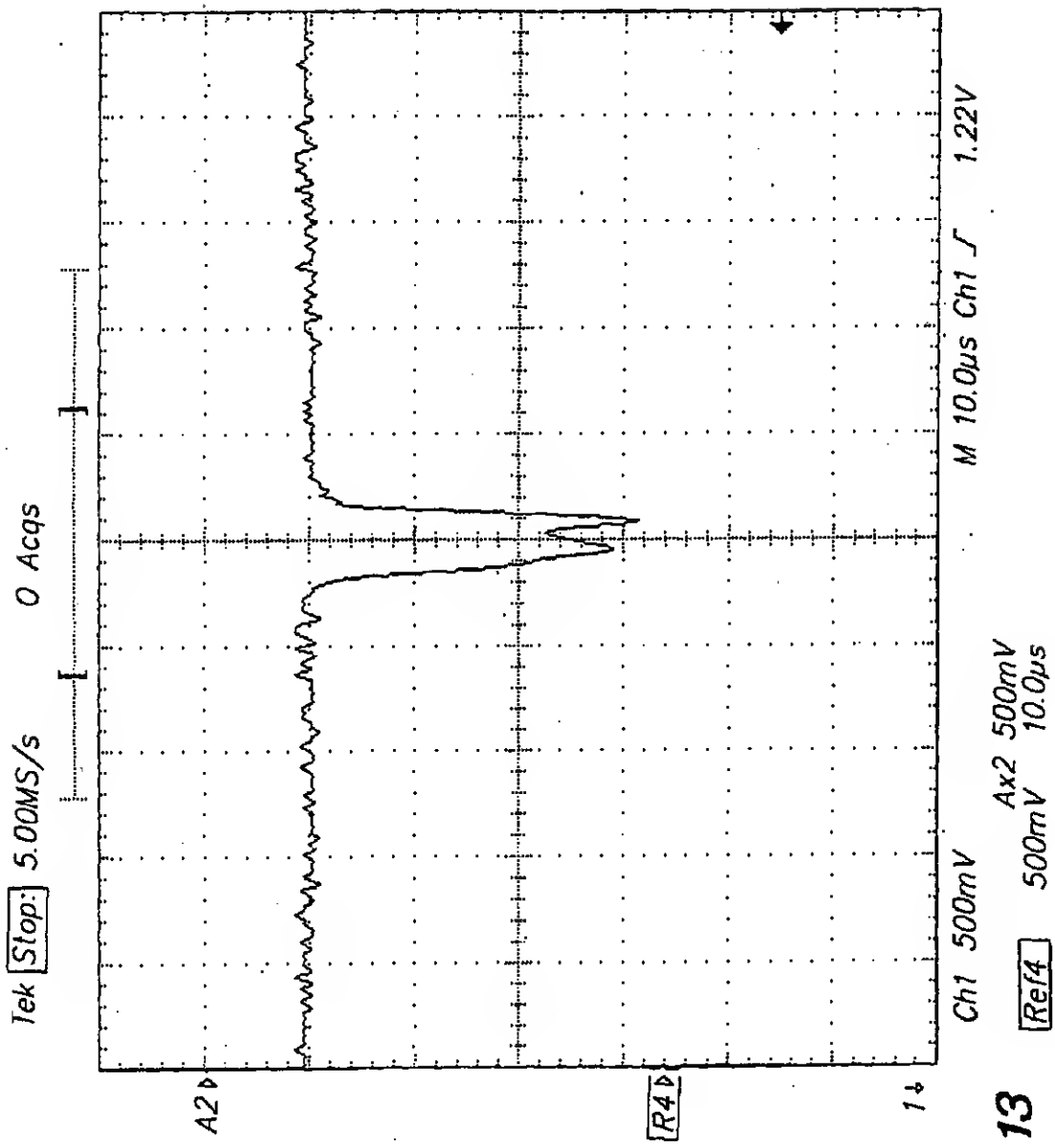


FIG. 13

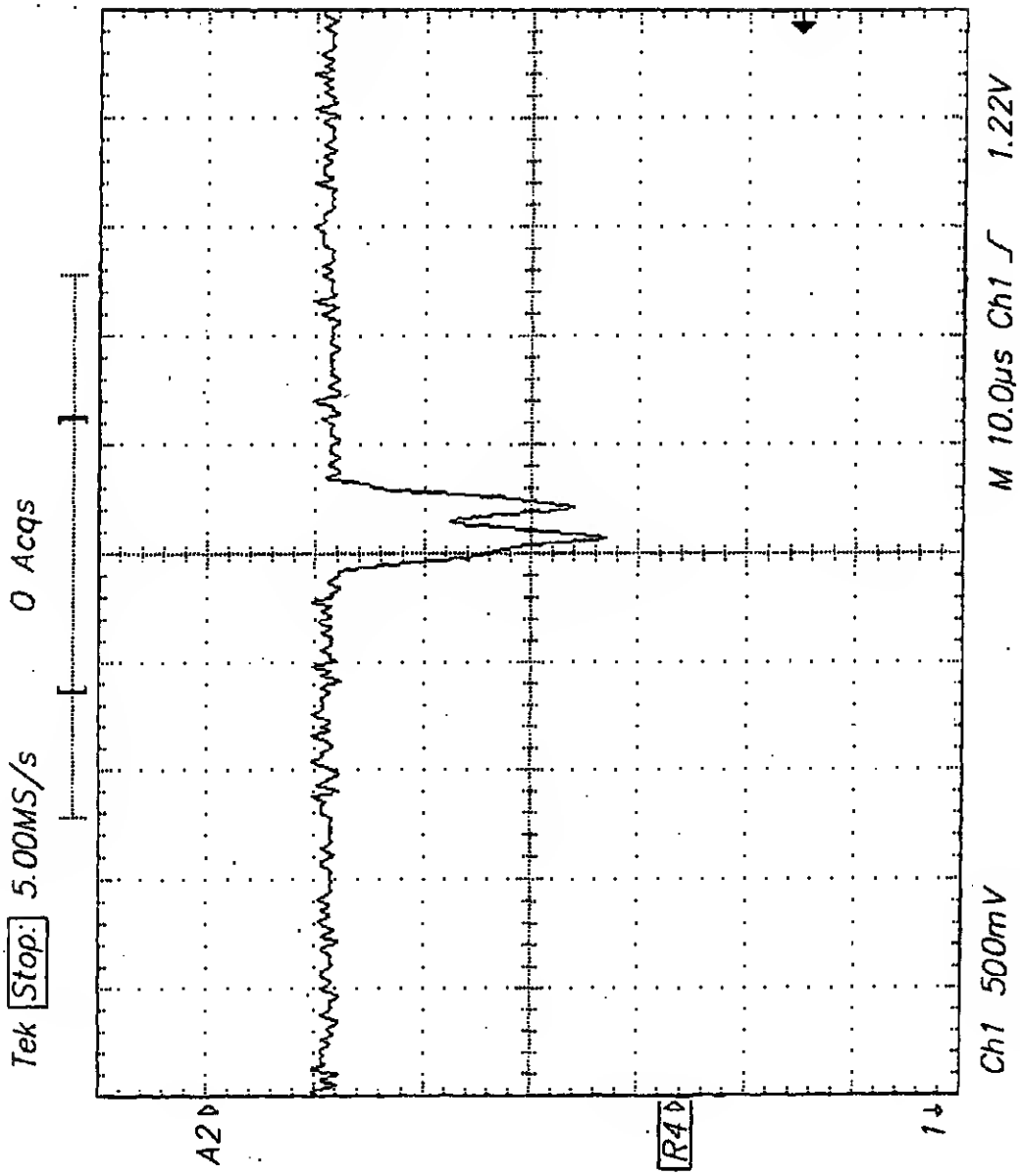


FIG. 14

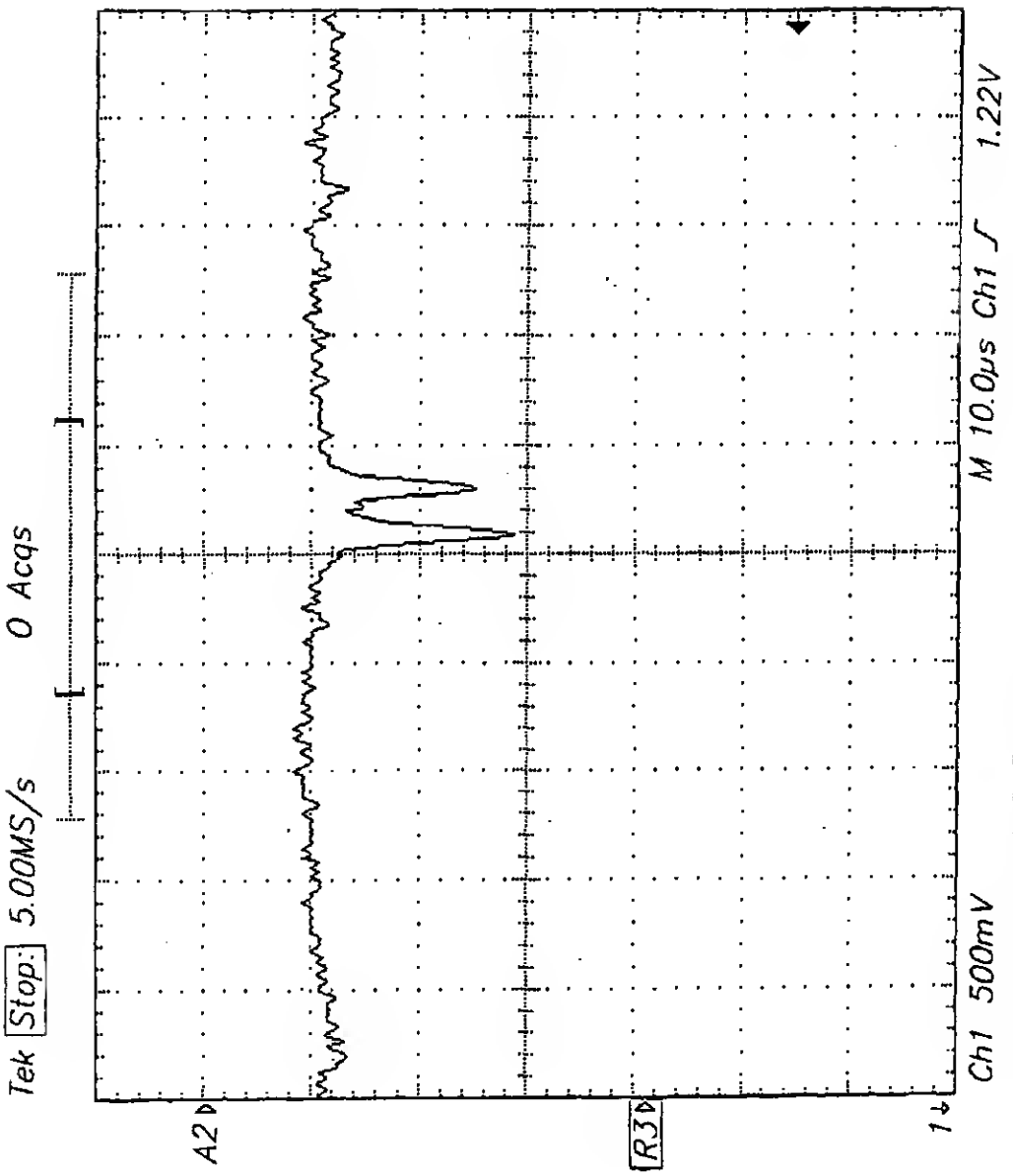


FIG. 15

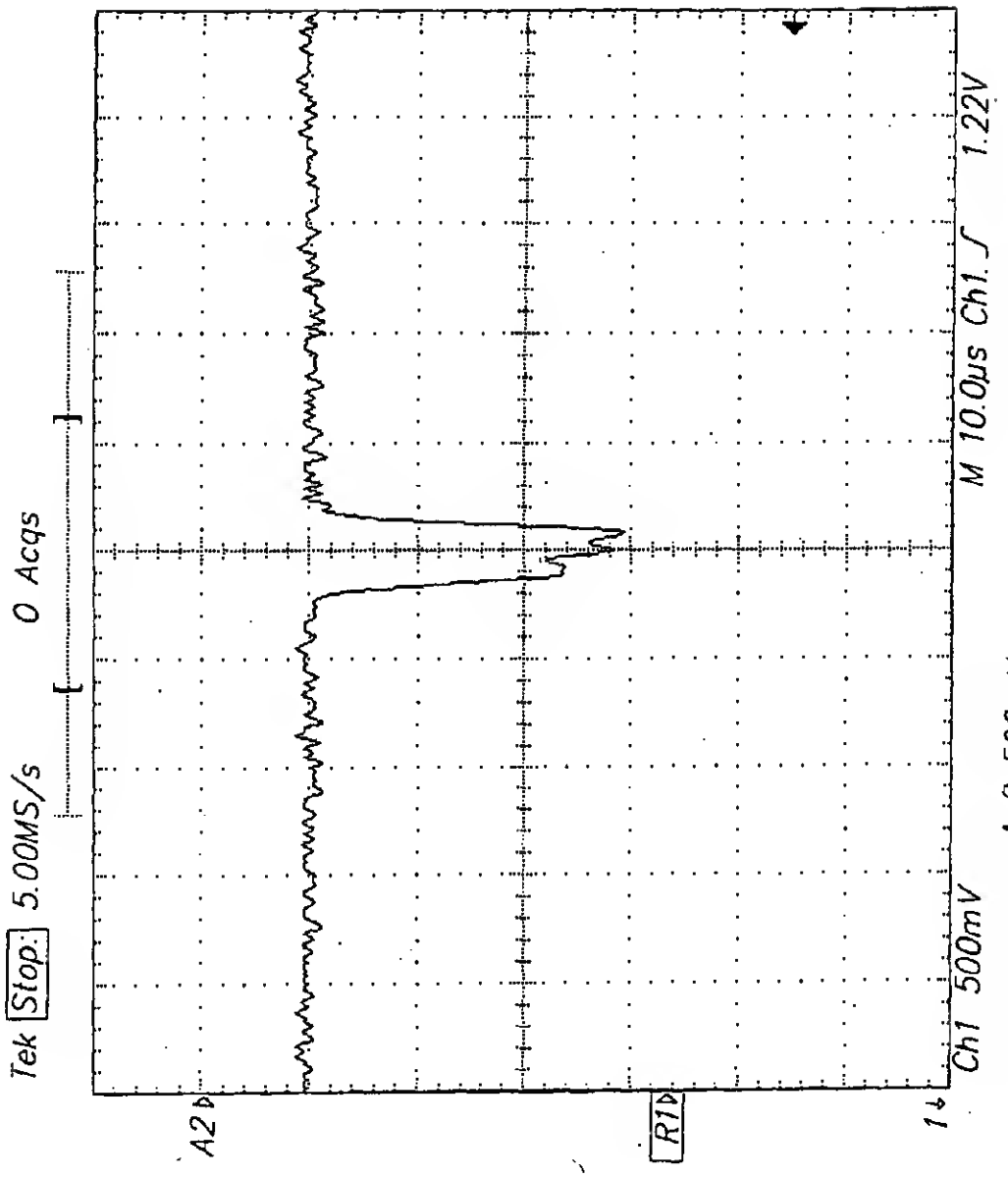


FIG. 16

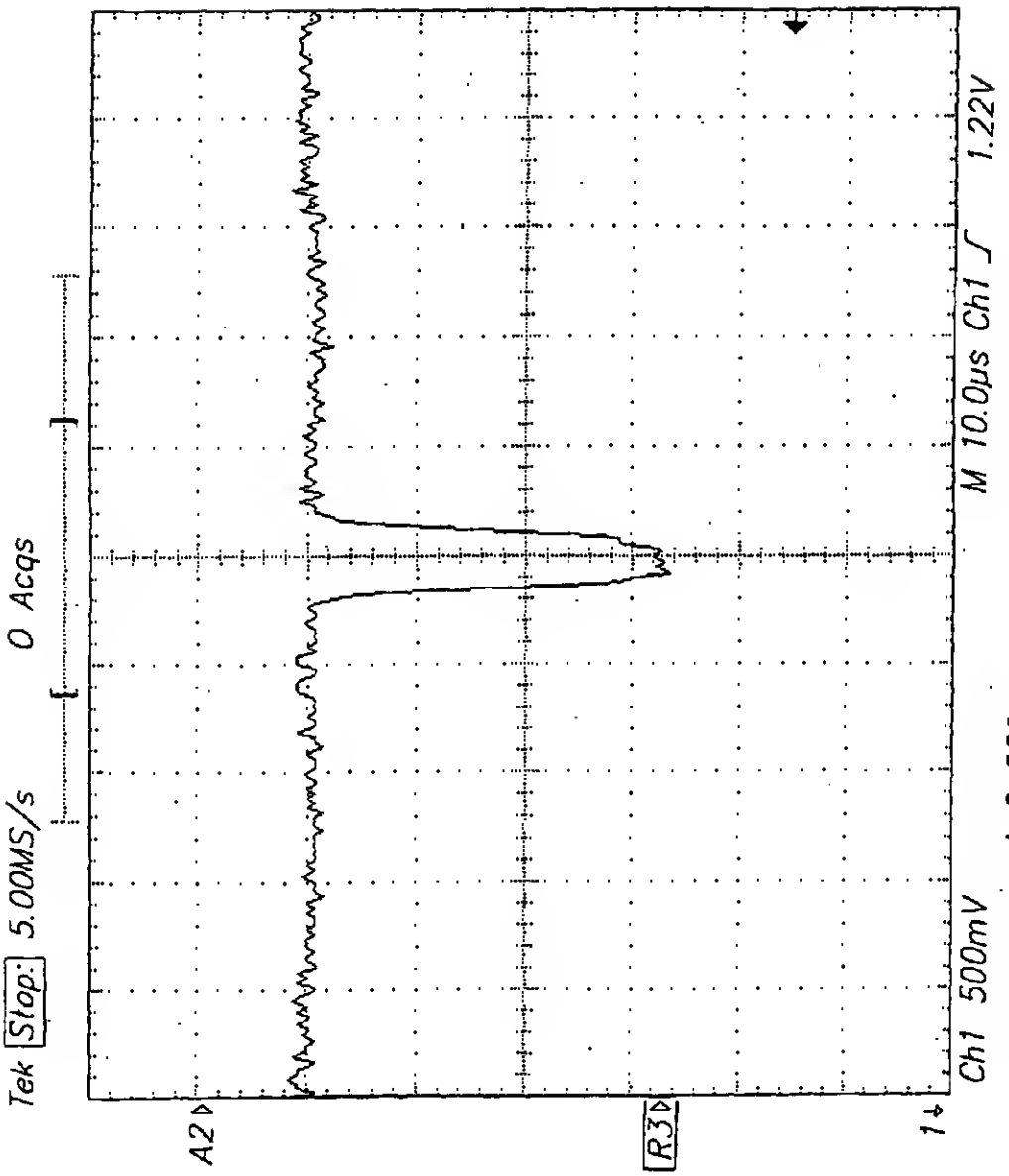


FIG. 17

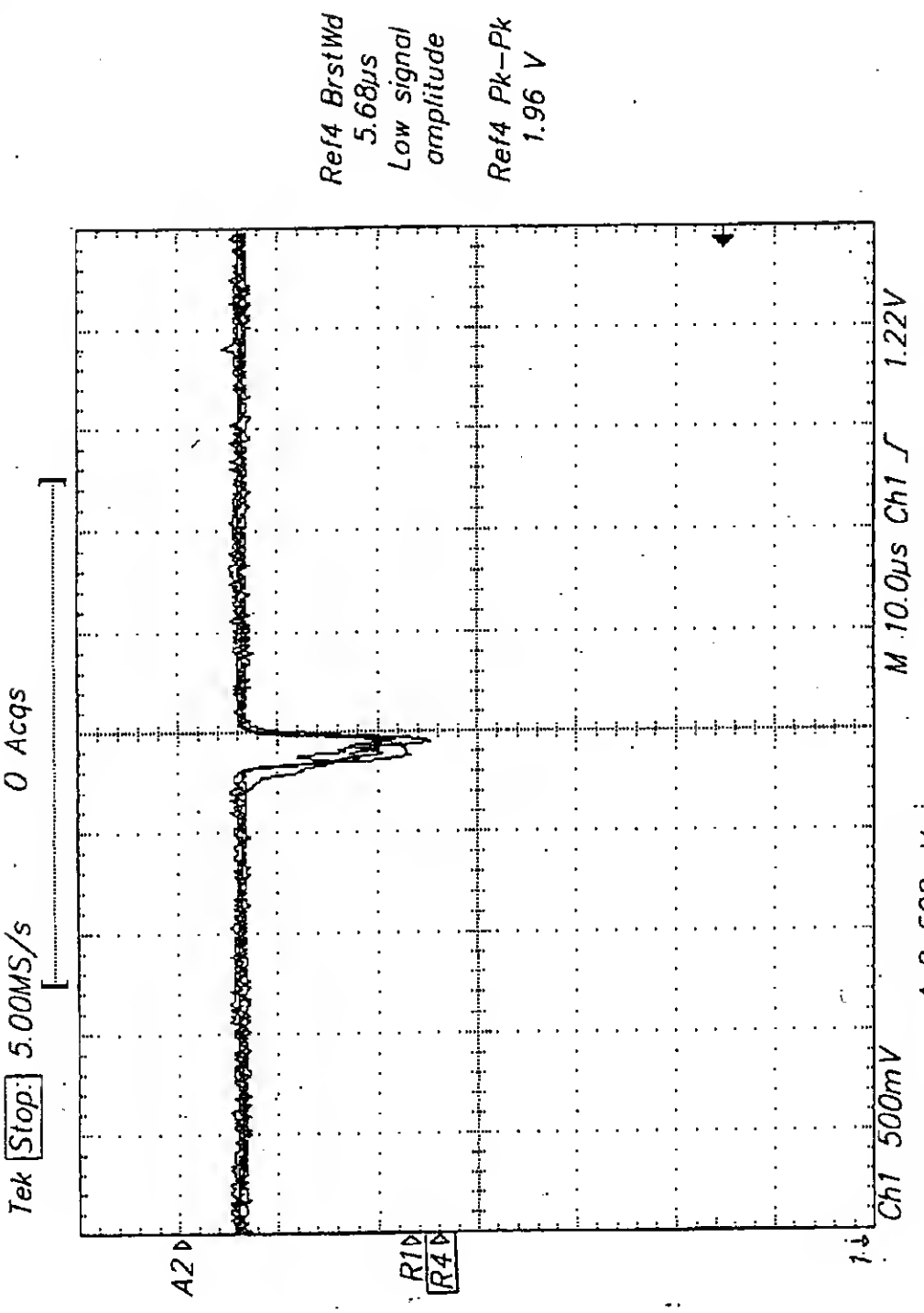


FIG. 18

FIG. 19

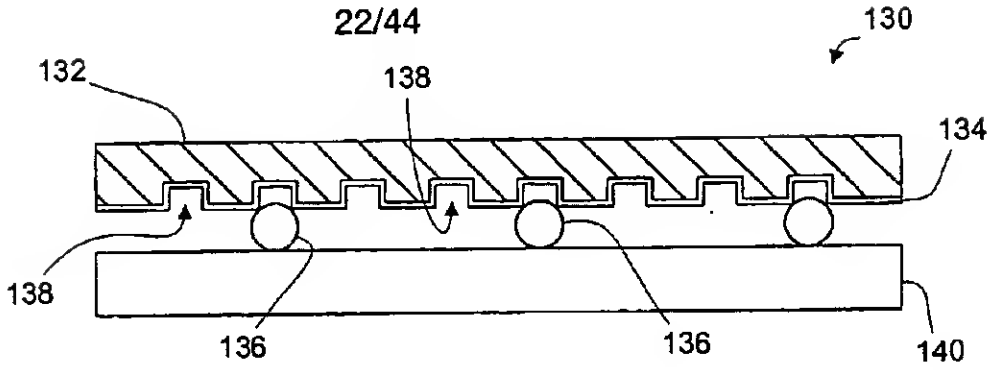


FIG. 20

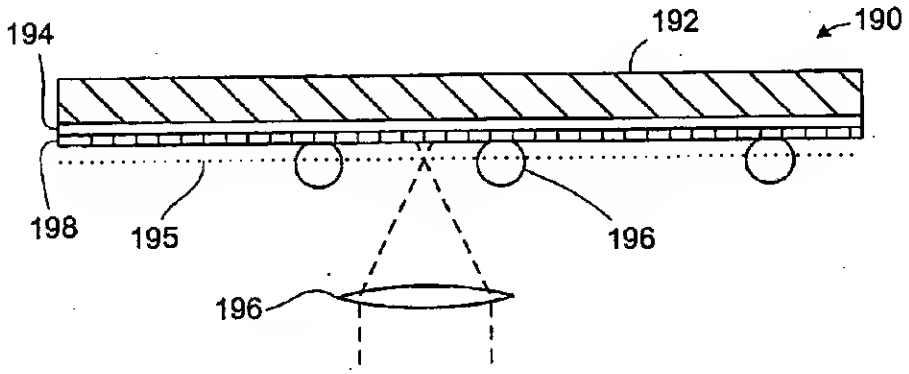
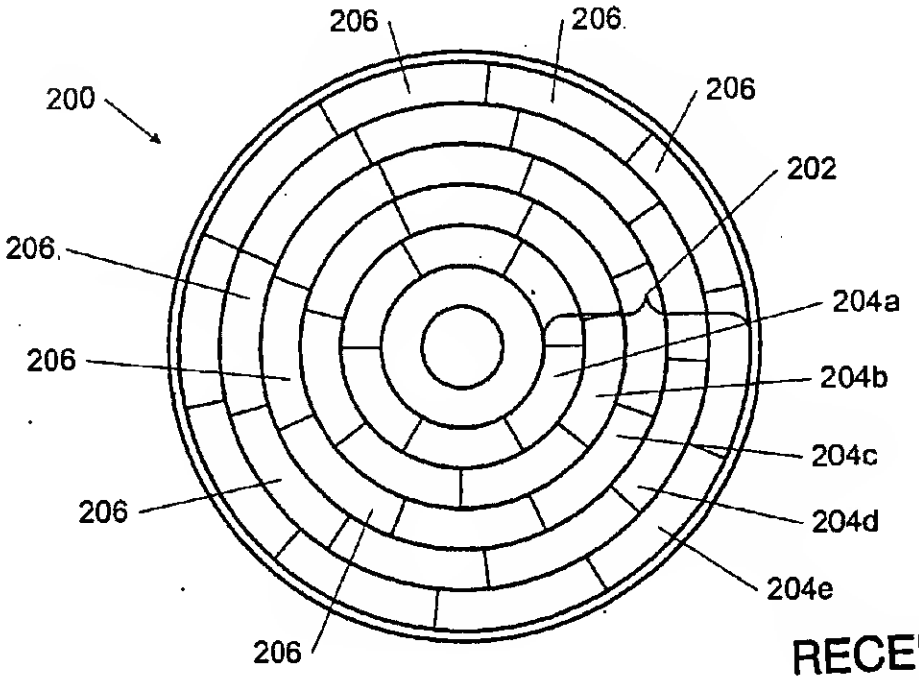


FIG. 21



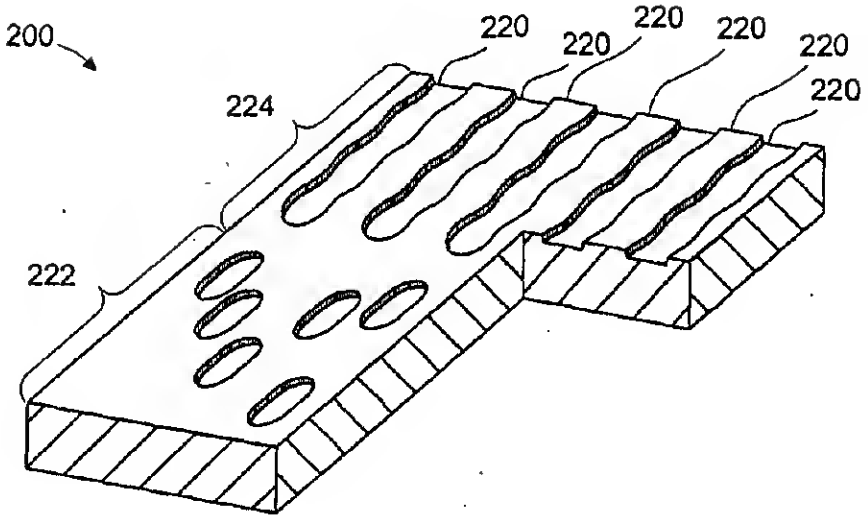


FIG. 22

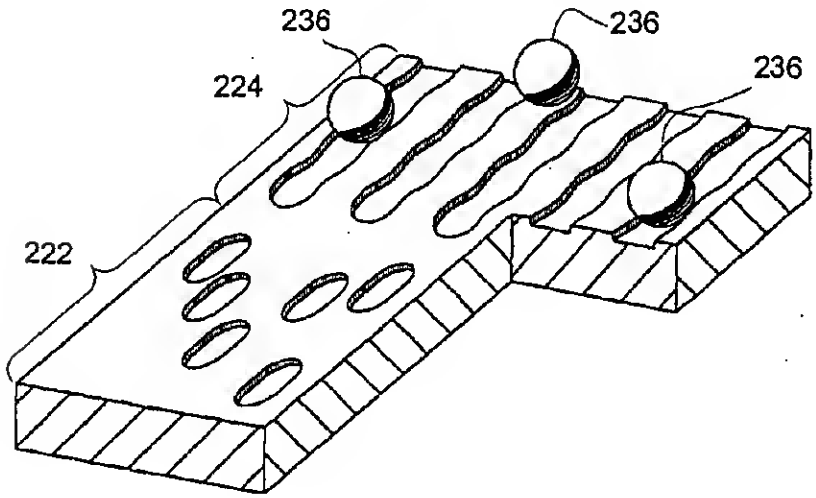


FIG. 23

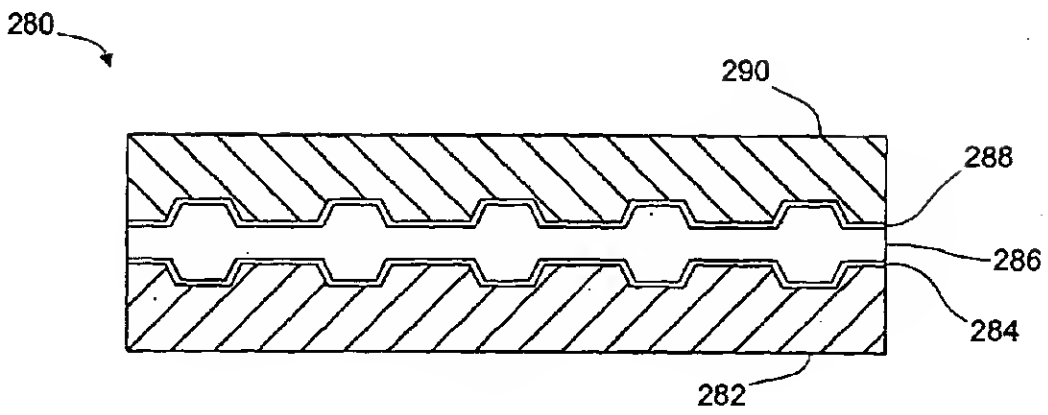


FIG. 24

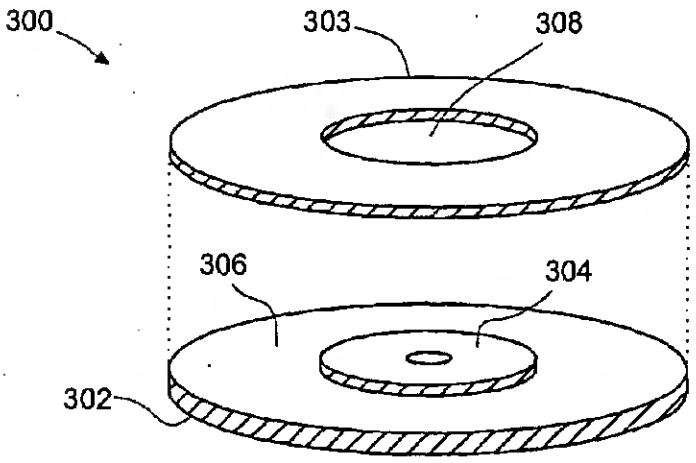


FIG. 25

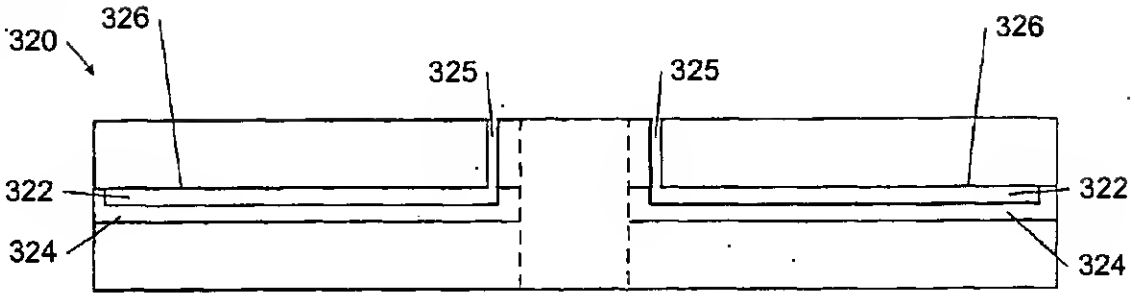


FIG. 26

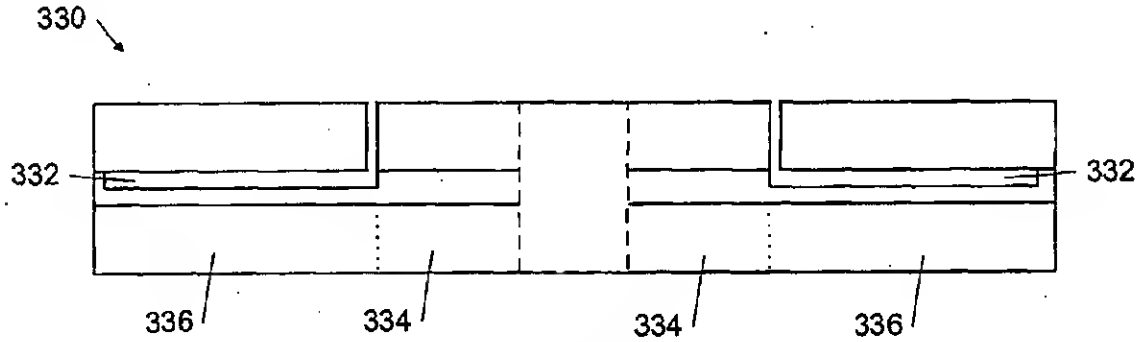


FIG. 27

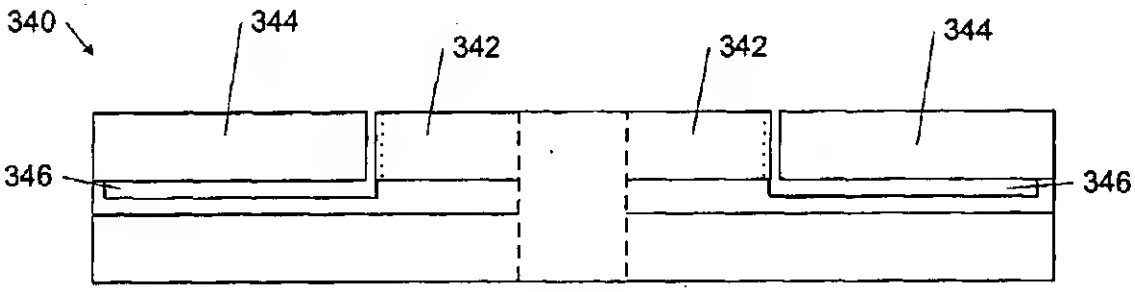


FIG. 28

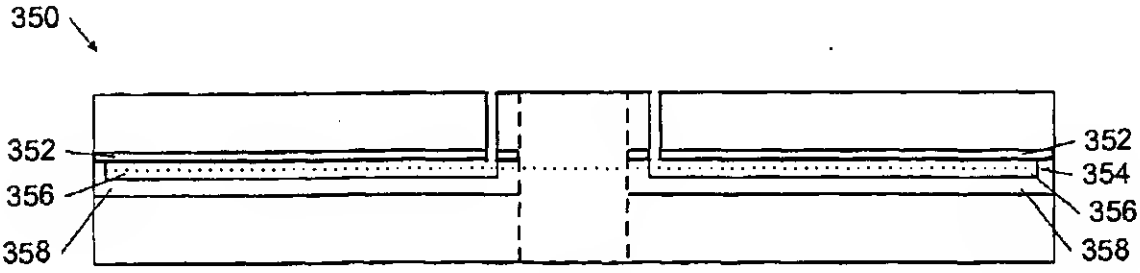


FIG. 29

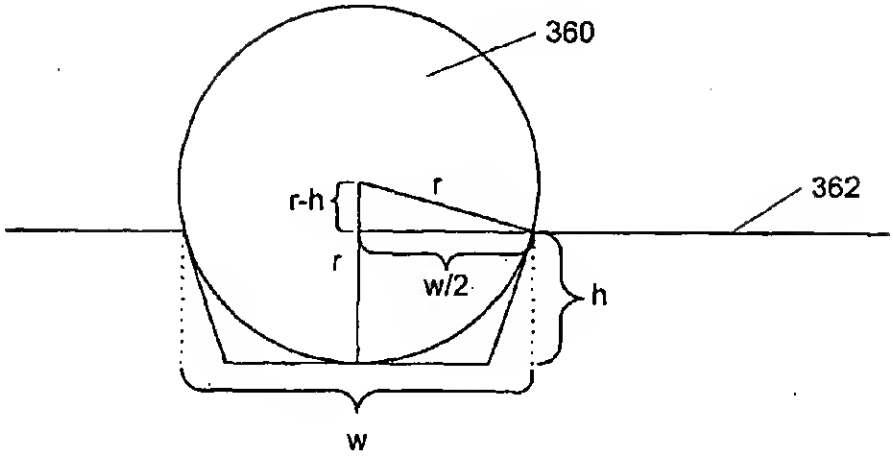


FIG. 30

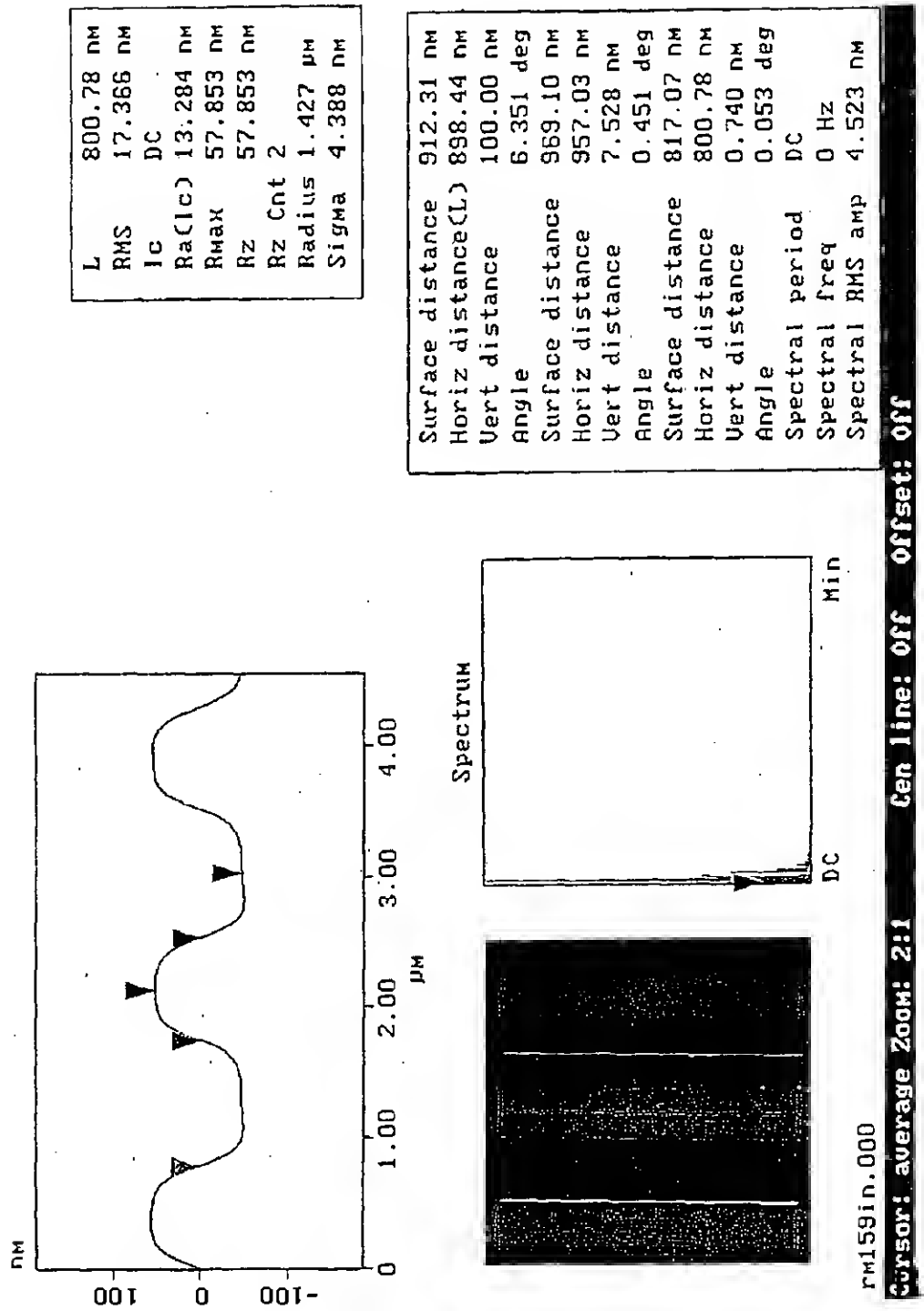


FIG. 31

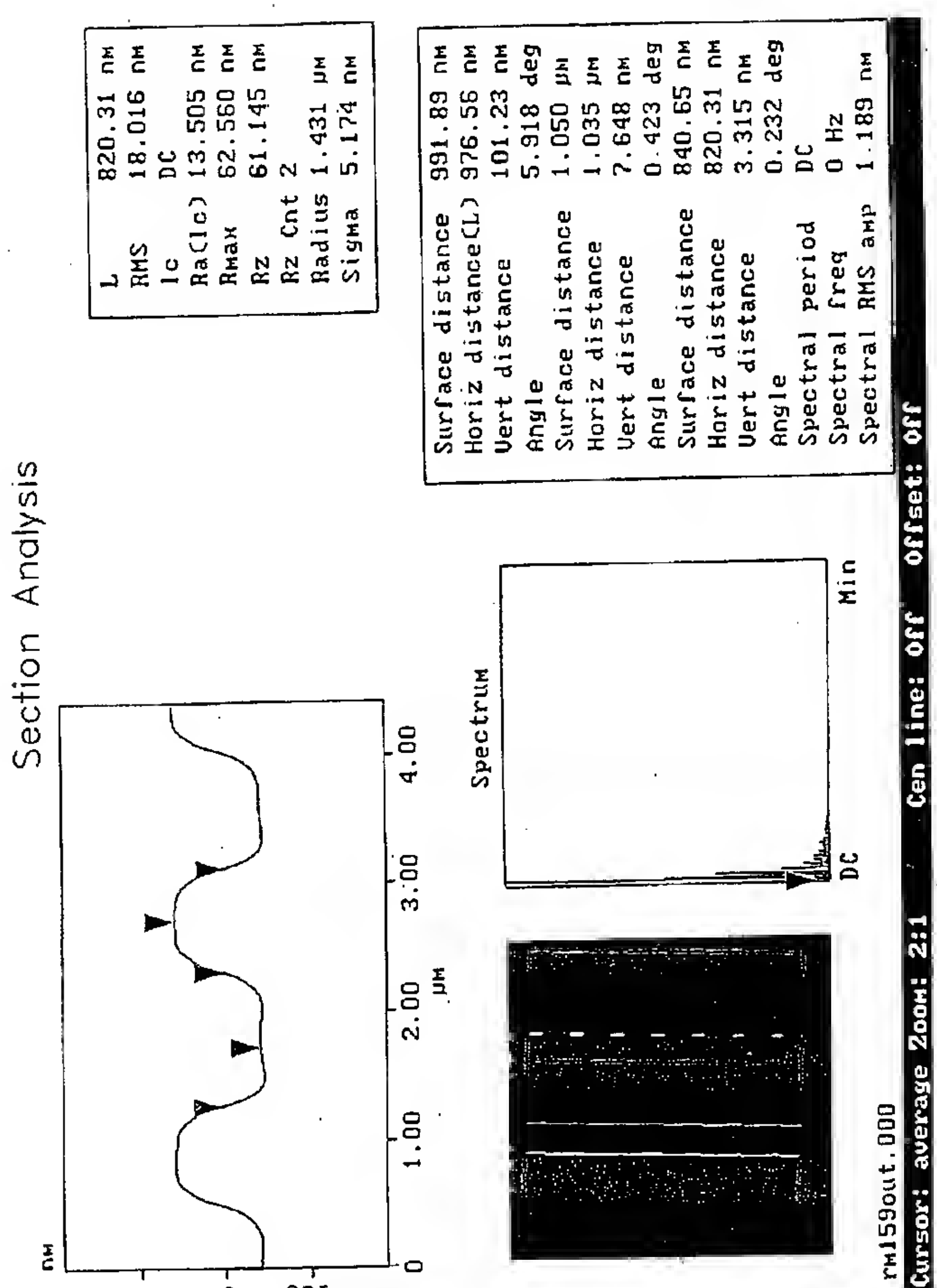


FIG. 32

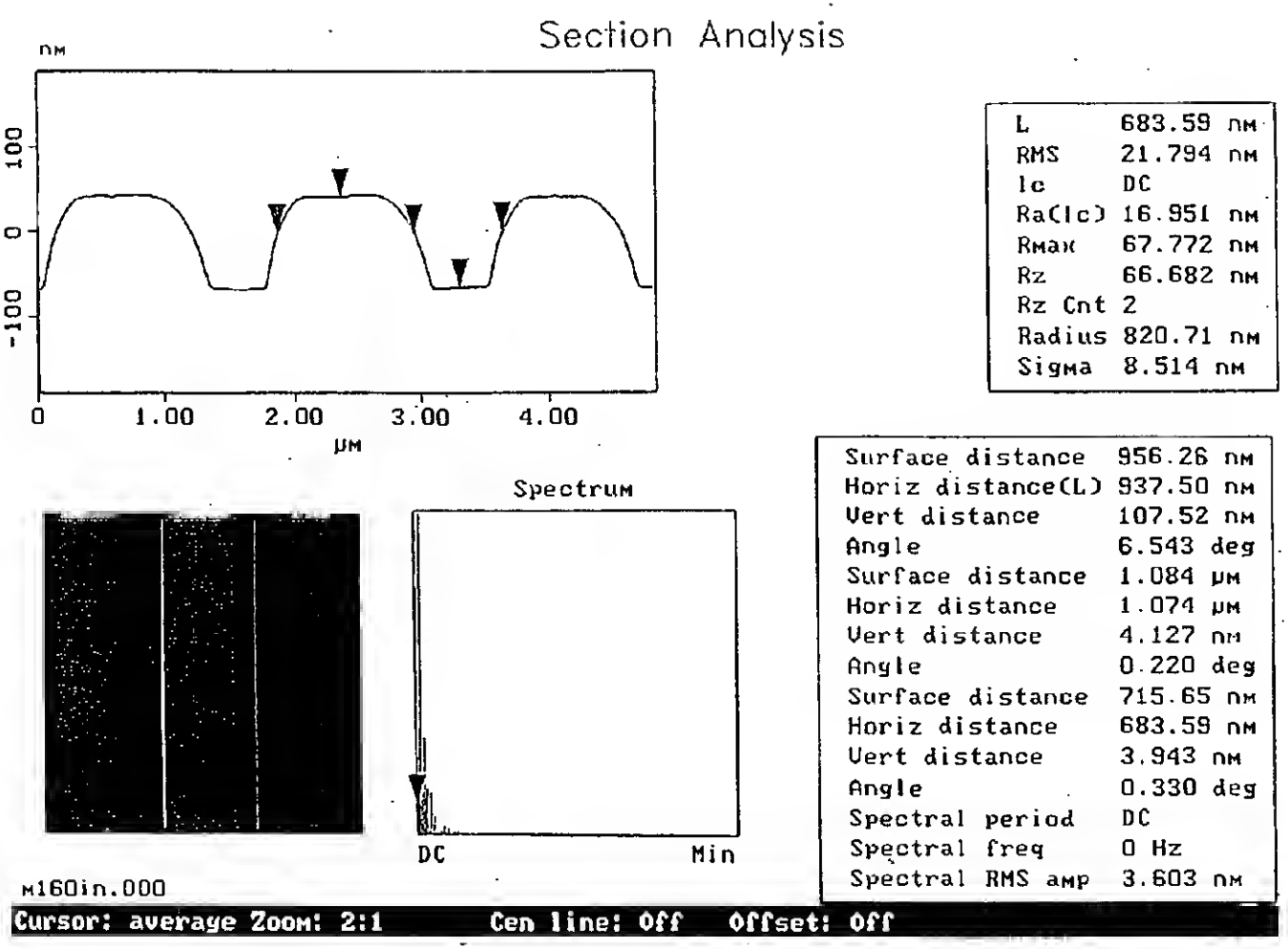


FIG. 33

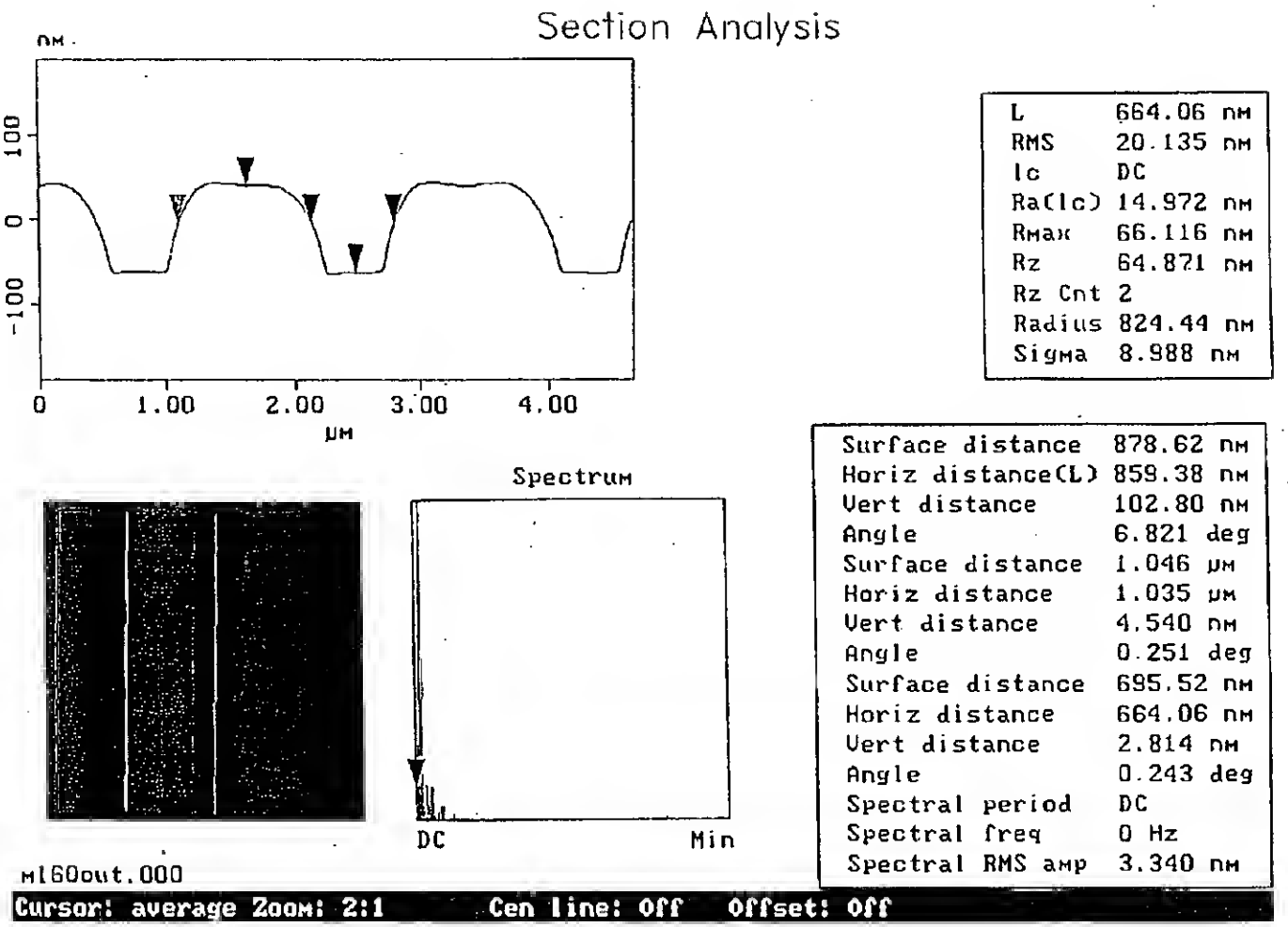


FIG. 34

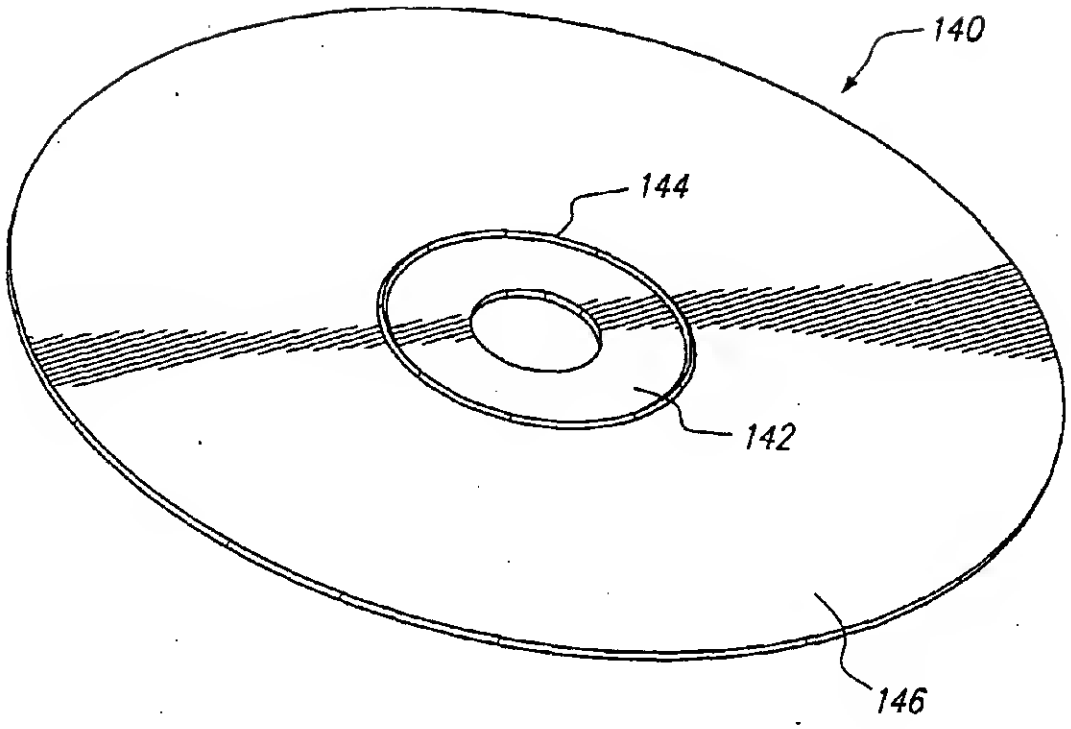


FIG. 35

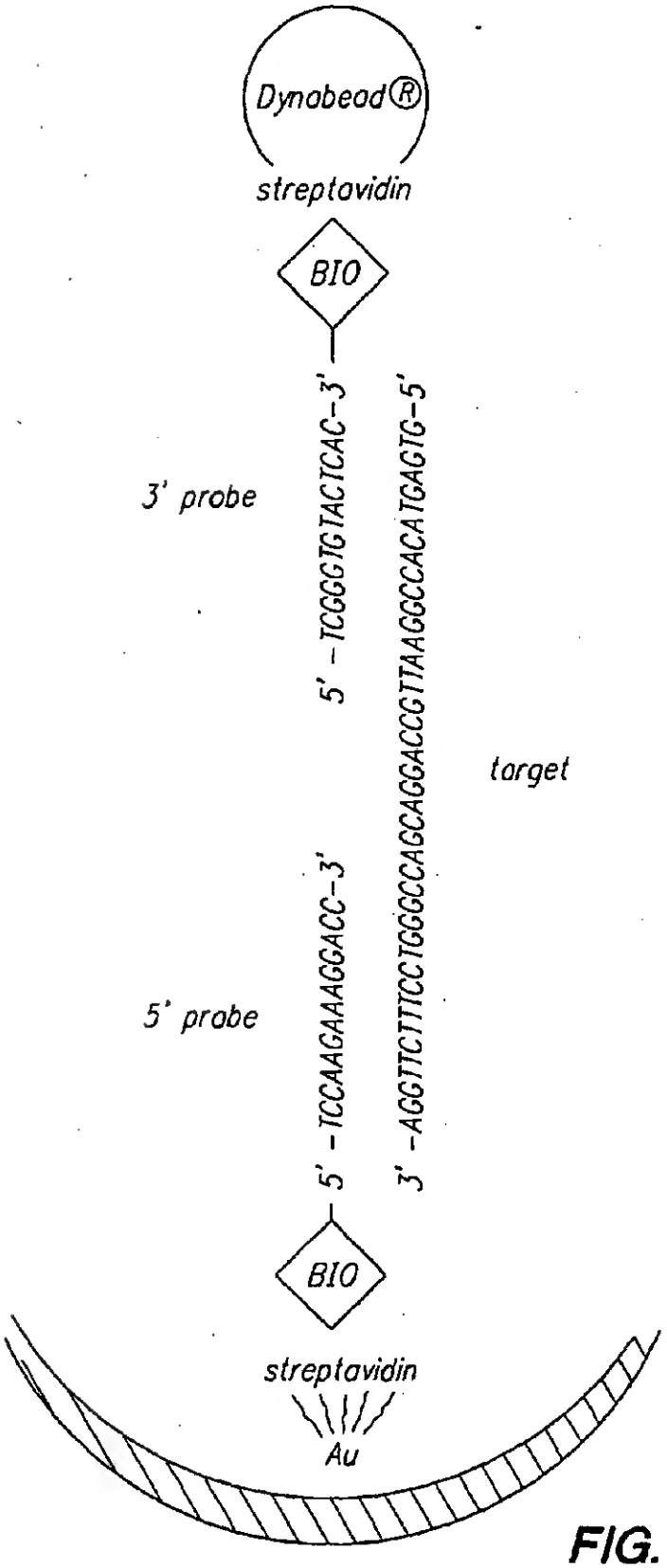


FIG. 36

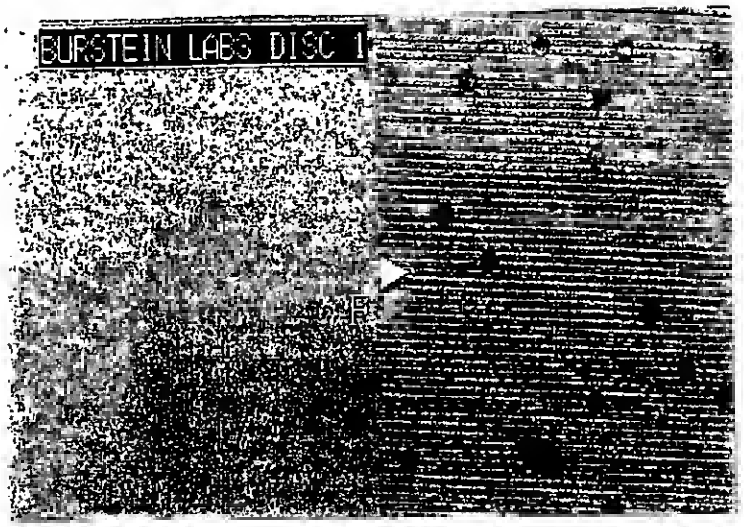


FIG. 37A

20 femtomoles

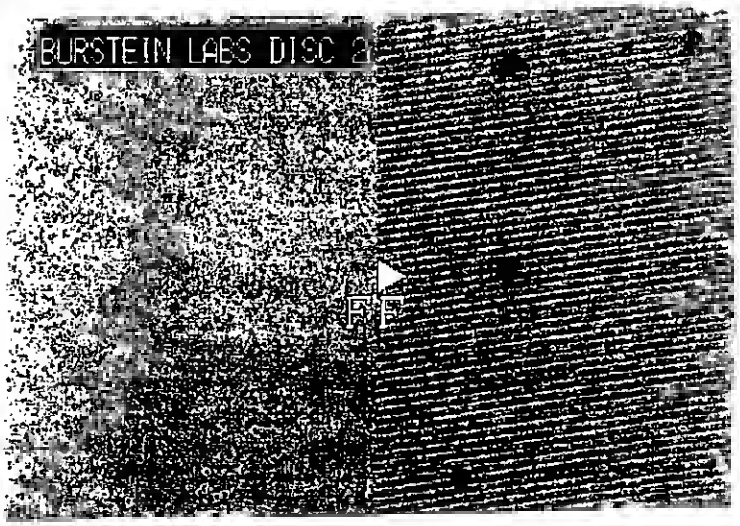


FIG. 37B

20 attomoles

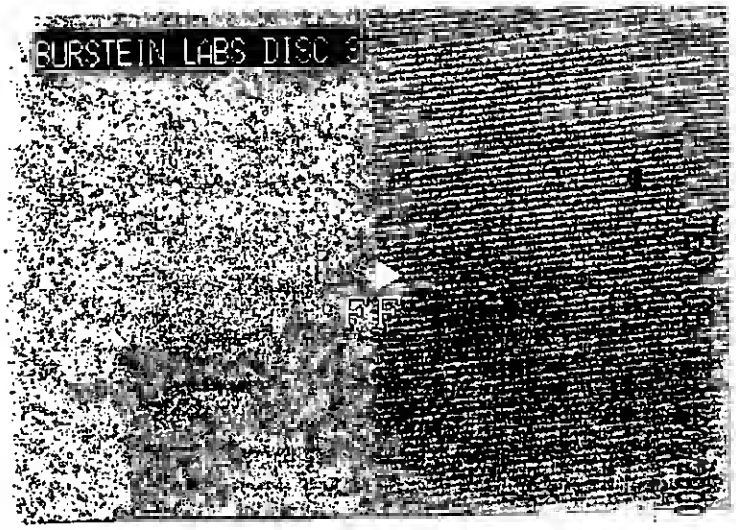
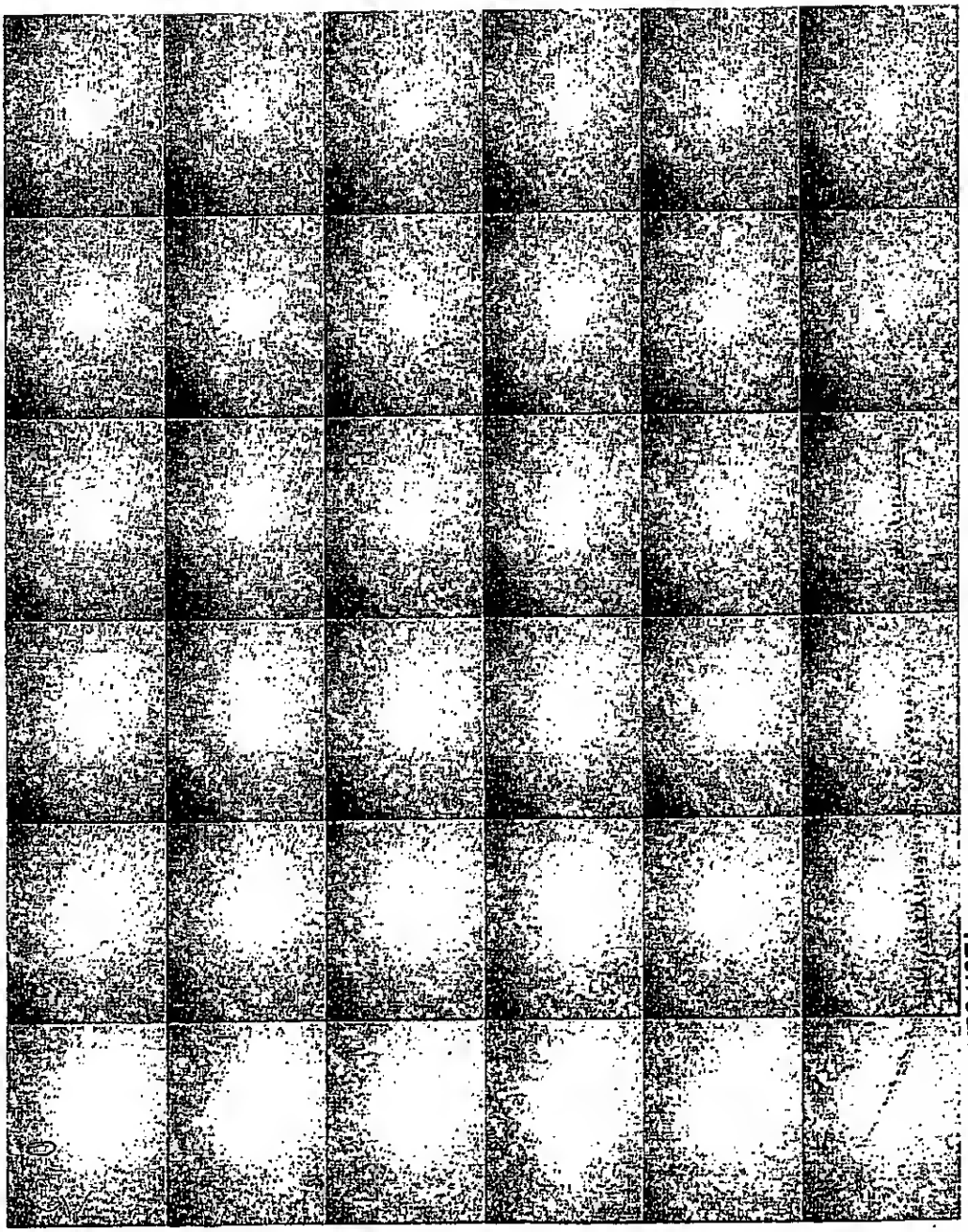


FIG. 37C

20 zeptomoles

FIG. 38



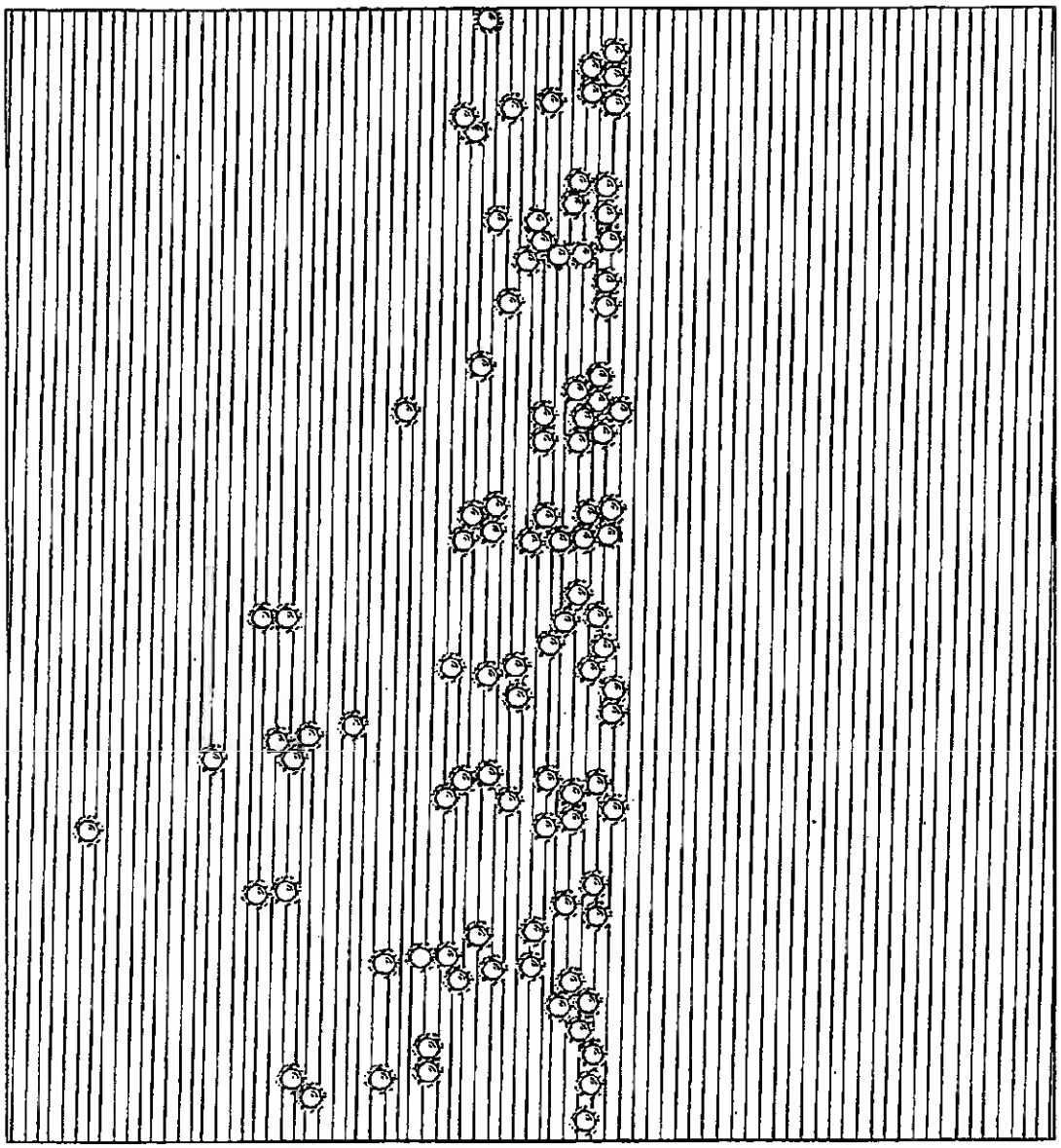


FIG.39

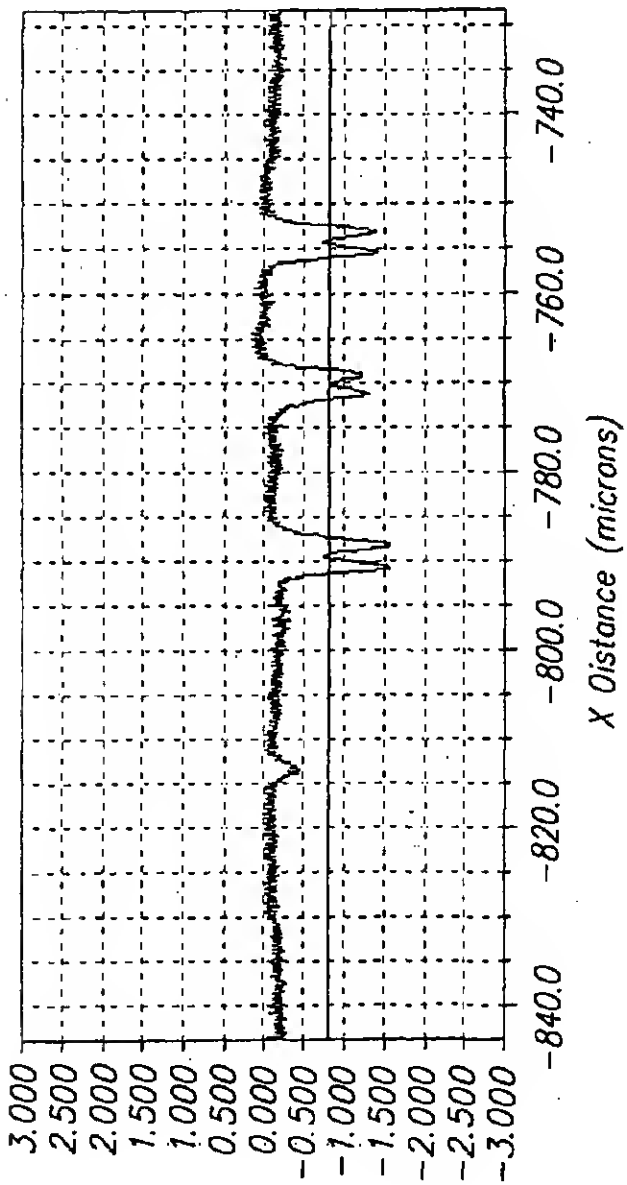


FIG. 40

AWM Muri	Supplementory sheet, mold acceptance test			CD-3-AWM
Job No	36-10236	Agent	CR-R	Rom hold	voc + mech	IFPI	-
SM Order No	9N.96293	Customer	Eximpo CS	Rom dio.	24	Product Code No.	256

Dimensions		0°	90°	180°	270°	
0°=mold ot top	R15	1.15	1.155	1.15	1.15	mm
Thickness	R40	1.155	1.155	1.155	1.155	mm

Center hole 15.05+/-0.3 15.05 Drm. 120+/-0.3 mm

Weight in g	Min	0	15	30	45	60
Meosure every 15 min.	g	15.26	15.27	15.26	15.26	15.26
during test	g		15.26	15.26	15.26	15.26
Mox. diff±0.1 g						

Water in mold	ACTUAL		DESIRED	Tol.
Sprue bush	9	ltr./Min.	7	-1/+3
Embosser	6	ltr./MIN.	7	-1/+3

Vocuum		without	with	diff.	tol.
Hondling	bor				
Rom	bor				

Mold Function	
Embosser	✓
Sprue ejector	✓
Ejector sleeve	✓
Sprue bush	✓

Air outlet	
FS dio.	✓
BS dio.	✓

Row moterial
Mokrolon 2005 ✓
Lexon 1020
Ponlite 5503

Visual foults			
Streaks	1/4	Center hole	✓
	1/4	Stacking groove	✓
	1/4	Info	✓
Clouds	1/2		✓
Voids	1		✓
Block dots	3		✓
Mott outer edge	3		✓
Burrs	3		✓
	3	Center hole	✓
	3	Outer Edge	✓
Scrotches	3		✓
Diesel effect	3		✓
Brown Discolorotion	5		✓

Molding compound cold	
Thickness of cavity (3)	1.462
Venting gap (5)	0.33
Position of embosser (9)	0.876
Position of spure bush (10)	0.162
Embossing stroke	0.7

Meosuring means	
Polorized light	1
Hologen light	2
Neon Light	3
Block (UV Light)	4
White poper	5
Micrometer	6
Bolonce	7

FIG. 41A

Title: TRACKABLE OPTICAL DISCS WITH CONCURRENTLY READABLE ANALYTE MATERIAL
Inventor: Mark O. Worthington
Docket No: BTI1 9810080(US)USX1P1X1

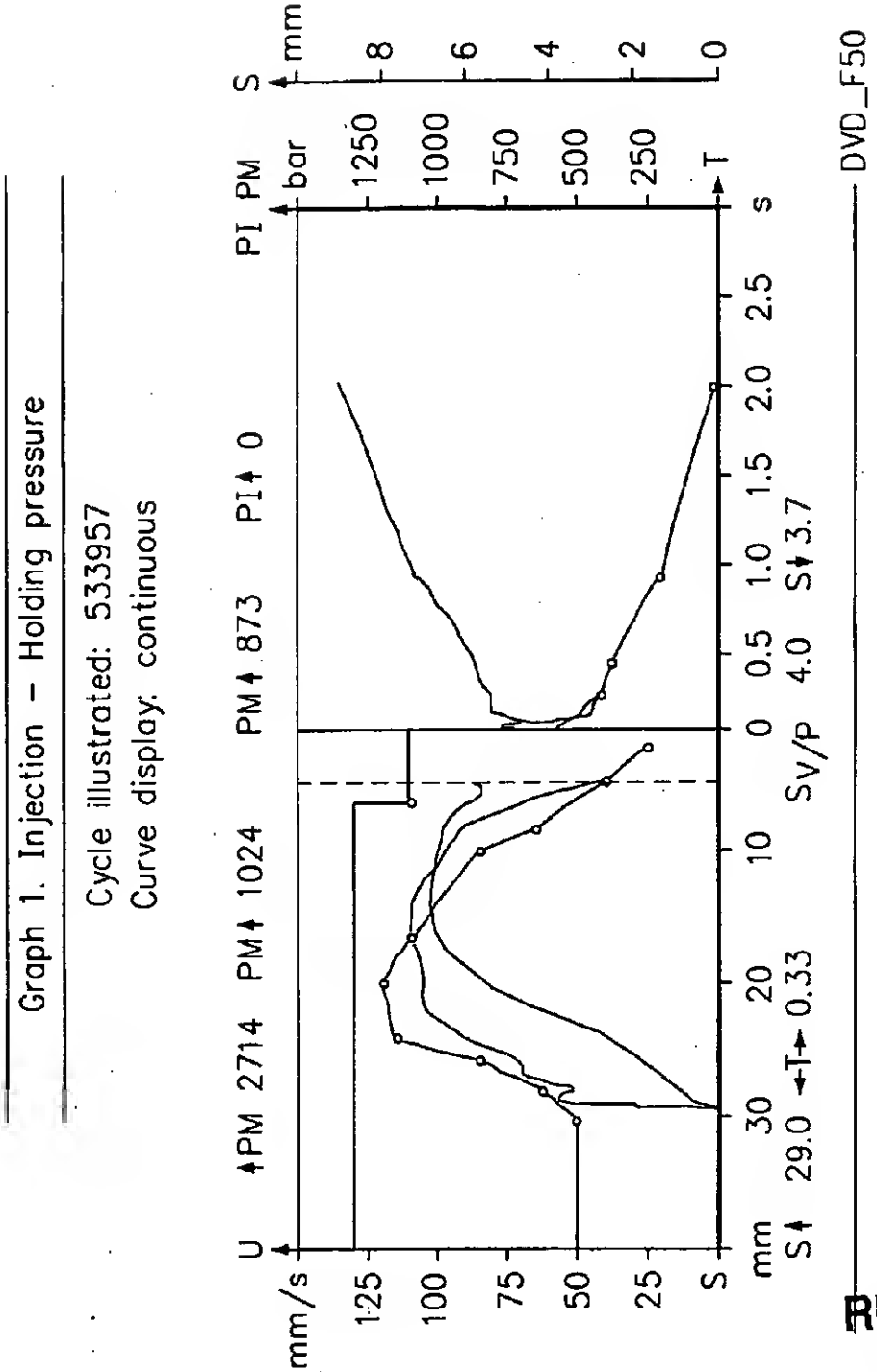


FIG. 41B

01.01 Mold movement					
Closing movement		Closing time	T32	=	000.
	V33 =100%	S33 = 019.0mm			
Pressure initiotion	V34 =100%	S34 = 000.7mm			
Opening movement		Opening time	T36	=	000.
	V41 =100%	S41 = 055.0mm			
Broking	V42 =010%				
Pouse time	T40 =000.000s	Mold position	S640	=	075.
Mold closing pressures					
Closing pressure	P682 =085%				
Pressure Build-up	P681 =020%	T681 = 000.10s			
	C608 = 0	Switched off			
02.01 Summory of mold ouxiliory controls/robotics					
Enoble removol	T680 = 0065.0				
Deloys					
Blow off sprue	T602 = 000.03	Sprue blowing time	T603	=	000.1
Advonce ejector pin	T53 = 000.10s				
Tronsfer stroke forword	T55 = 000.12s				
Tronsfer Stroke return	T56 = 000.15s	Extend removol	T668	=	000.2
Embosser forword	T62 = 001.20s	Embosser return	T63	=	000.1
Blow on nozzle side	T75 = 000.50s	Nozzle side blowing time	T74	=	000.8
Blow on moving side	T671 = 000.00	Moving side blowing time	T71	=	000.1
Unit Forword	T680 = 000.70s				
Storting progrom	C683 = 00000	T683 = 000.00s	S683	=	0004.
Cyle time	T11 = 009.05s				
Removol time	T640 = 000.70s				

FIG. 41C

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03.01 Metering					
Screw retroction	C17 = 0	Switched off			
Metering		Metering time	T21 = 005.9		
Delay	T20 = 000.50 s				
Metering stages	C124 = 2				
	S23 = 026.0 mm	P23 = 0060 bar		N23 = 100 1.	
Metering end point	S24 = 029.0 mm	P24 = 0010 bar		N24 = 020 1.	
Holding pressure	P27 = 0010 bar	Start of injection		S0 = 029.0	

04.01 Injection					
Enable injection	S682 = 0002.0 mm	Screw position	S641 = 029.0		
Injection values	C121 = 10	Start of injection	S0 = 029.0		
	V196 = 0050 mm/s	S196 = 030.0 mm			
	V197 = 0062 mm/s	S197 = 027.6 mm			
	V198 = 0085 mm/s	S198 = 025.6 mm			
	V199 = 0115 mm/s	S199 = 024.0 mm			
	V200 = 0120 mm/s	S200 = 019.8 mm			
	V201 = 0110 mm/s	S201 = 016.2 mm			
	V202 = 0085 mm/s	S202 = 009.5 mm			
	V203 = 0065 mm/s	S203 = 008.0 mm			
Enable V/P changeover	V204 = 0040 mm/s	S204 = 004.0 mm			
Forcible changeover	V205 = 0025 mm/s	S205 = 001.5 mm	T2 = 000.3		
		V/P changeover point	S11 = 004.0		
Flow number	S121 = 018.2 mm	S122 = 015.0 mm	C125 = 2776		
Pressure monitoring		Peak pressure	P125 = 01044		
First stage	P101 = 01300 bar	T201 = 00.02 s			
Second stage	P102 = 01100 bar	T201 = 00.02 s	S102 = 006.0		

FIG. 41D

04.02 Holding pressure, cooling								
Holding pressure values	C122	=	04	Changeover point		S11	=	004.0
	P12	=	00550 bar					
	P117	=	00420 bar	T117	= 000.20			
	P118	=	00380 bar	T118	= 000.40			
	P119	=	00200 bar	T119	= 000.90			
Holding pressure time				T120	= 002.00			
Cooling time	T39	=	005.30 s					
Melt cushion monitoring				Melt cushion		S19	=	003.7
Upper limit	S219	=	010.0 MM	Lower limit		S119	=	000.5

05.01 Nozzles, unit, purging/dry cycles								
Standstill monitoring	C606	=	60 min	C640	= 0004 min			
Unit								
Unit forword	T680	=	000.70 s	V29	= 030 %			
Lift	T30	=	000.30 s	V30	= 050 %			
Unit set-up and manual movements								
Move forword	V816	=	030 %	Lift	V806 = 030 %			
Purge/dry cycle/clean								
Number of metering strokes	C16	=	20	C201	= 50			
Metering	S16	=	028.0 mm	P16	= 0060 bar	N16	=	200
Injection	S18	=	001.5 mm	V101	= 05 mm/s			
Delay for purging	T606	=	000.00 s					

FIG. 41E

06.01 Temperoture control, plostifier zones/temperoture control devices

Zone/description	Set point	Actuol volue	Reduced	Tolerance minus	Tolerance plus	Heating outputs	Cooling
10 Melt temperoture	310° C	305° C	180° C	040° C	040° C		
30 Nozzle	330° C	330° C	180° C		040° C	014%	
13 Nozzle	315° C	315° C	180° C	040° C	040° C	025%	
Cylinder heod	310° C	310° C	180° C	040° C	040° C	008%	
15 Compression	305° C	305° C	180° C	040° C	040° C	005%	
16 Compression	305° C	308° C	180° C	040° C	040° C	006%	
18 Feed	300° C	295° C	180° C	040° C	040° C	070%	
20 Inlet	060° C	060° C	060° C	040° C	040° C		024

Zone/description	Set point	Actuol volue	Reduced	Tolerance minus	Tolerance plus	Heating outputs	Cooling
24 Heoting/cooling device	112° C	093° C	050° C	020° C	020° C	000%	000
25 Heoting/cooling device	114° C	091° C	050° C	040° C	020° C	000%	000

08.01 Disk tronsfer

Peripherol interfoce	C684 =	0	Without signol ocknowledgement			
Buffer switch-off size	C680 =	65000				
Production deloy	T682 =	001.00 s	C605 =	0	With interruption of cycle	
Max. tronsfer time	T601 =	001.00 s				

FIG. 41F

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09.01 Production control

Applicotion	C340	=	2	No opplicotion		
Dota set number	C315	=	100			
Production sequence						
				Piece counter	C324	= 29270
Item number	C303	=	1	Cycle counter	C325	= 29270
Cycle time	T11	=	009.05 s	Foilure rote	C718	= 30.56%
Production preperotion				Reoson	C357	= 00

10.01 Process stotistics

Q monitoring	C340	=	2	Monitoring without screenning out		
Q report	C700	=	0	No report		
	cycles of which			out of toleronce	foilure rote	
Totol	C325	=	29270	C318 = 8946	C718 = 30.56%	
Rondom sample	C326	=	29269	C338 = 8946	C738 = 30.56%	

Process voriobles	Set Point x	Toleronce +/−	Actuol Volue x	Meon xq	Scotter 3s	Out of Toleronce
Metering time	1.20	0.30	5.98 s	2.32	5.408	−06786
Injection stort	30.1	2.0	29.0 mm	28.6	0.82	2028
Injection time	0.47	0.20	0.33s	0.39	0.105	0
V/P chongeover point	3.5	1.0	4.0 mm	4.0	0.04	0
Melt cushion	4.2	1.0	3.7 mm	3.8	0.25	0
? peak volue	600	200	871 bor	682	99.9	−06566
? peak volue	0		0 bor	0	0.0	
Flow number	2500	300	2776	2441	99.9	359
Cycle time	3.90	0.50	9.05 s	5.08	6.421	−06570

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FIG. 41G

10.02 Configuration of the quality monitoring

Reaction: Process data outside tolerance
Switch-off behavior C703=0 no reaction

10.03 Q report intermediate store

Manufacturer
Machine No. DVD_F50
Job data

FIG. 41H

16.01 System characteristics

Machine data

Machine type	DISCJET 600/110	Order number	DVD_F50
Control version	PAC 13.54	IMC 12.26	CEL 10.31
Database version	DB 05.80	Date created	23.10.1996
Special	350400	Version	17106

Mold data
Installed height S90 = 160 mm

Plasticizing	Identification	C806 =	024		C804 = 0024
Ram nominal diameter	S801	= 032.0 mm		Max metering stroke	S802 = 100.0
Max. permissible melt pressure	P800=01482 bar			Max. specific melt pressure	P802 = 01482 bar
Max. permissible backpressure	P801	= 0317 bar			

Temperatures	Set point/actual value	Tolerance −/+		Heating	Cooling
Cabinet	TH1 = 035 026° C	030° C	010° C		
Oil	TH2 = 050 051° C	041° C	011° C	000%	005

FIG. 41I

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